The Builder.

VOL. XXXVI. No. 1835. SATURDAY, APRIL 6, 1878.

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George Gilbert Scott.

LAST week brought to a somewhat sudden and unexpected close what must be called, all things considered, the most successful architectural career of modern times. It did not, indeed, fall to the lot of Sir Gilbert Scott to carry out any one building so central and unique in its interest, so completely national in its associations, as that great structure on the banks of the Thames upon which mainly rests the one architectural reputation of modern England which can fairly be paralleled with his. But the Houses of Parliament was an opportunity such as comes to architects once in an age only; and if with Barry there remains, therefore, the crowning and central architectural achievement of his age and country, with Scott there remains the most extended and multitudinous success which perhaps any one man has ever achieved in the career of an active professional architect. As was observed by a speaker at the Institute meeting on Monday evening, he was "everywhere" within the circuit of Great Britain; besides carrying out, beyond the limits of his own country, works of sufficient magnitude and importance to establish a reputation in themselves. To the English public, so careless and mostly so ill-informed about the art and the profession of architecture, Scott was almost the one name which every one seemed to know,—we may say probably the only one the eminence of which was generally admitted by common consent and as a matter of course. In matters of art, as we all know, the verdict of the *vox populi* is by no means to be necessarily accepted; but the fact that a member of a profession so little popular and so little understood in England should have compelled average Englishmen to believe in him so thoroughly, is in itself a fact the significance of which must not be underrated. But it is not merely as an exceptionally-successful professional architect that Sir Gilbert Scott will be remembered. His architectural career has a wider and more permanent interest from the fact that he is identified, in a degree and in a manner in which no other man has been, with the most remarkable movement in the history of modern architecture since the Italian Renaissance. When the history of English architecture in the nineteenth century comes to be written, it will be recognised that what the name of Palladio in common parlance is to the Classic Renaissance in Italy in the sixteenth century, the name of Scott is to the similar and equally-remarkable movement which may be called the Gothic Renaissance in England in the present century. We say "in common parlance," because in real truth Scott has had a wider and more important influence on his own day than Palladio had on his; and it may be also added, a healthier influence as an architect, since he was always an advocate for truthful and solid construction as the basis of all architectural design, whereas his Italian prototype was lamentably indifferent on this head, and was content with elaborating a Classic architecture much of which was little better than a whited sepulchre, a sham exterior executed in perishable materials. The avowed object of Scott, as expressed in one of the earliest of his few literary productions ("A Plea for the faithful Restoration of our Ancient Churches") was to *awaken* an art indigenous to the country, which he regarded as having suffered a temporary lapse. And whatever opinion may be held as to the value or reasonableness of such an attempt in the abstract, it must be admitted that if it were to be made, no one could have gone into it with a more thorough basis of archæological knowledge, or on more thoroughly sound principles in regard to the relation which such a revival should bear to the demands of actual modern life. In the words of ancient Pistol, "if he had tidings," he "delivered them like a man of this world"; if he preached the art of the fourteenth century, he did so in the language of the nineteenth century. In this respect the practical character of Scott as a revivalist comes out strongly in comparison with that of the earlier apostle of Gothic, Pugin. The latter was a man of genius and a noble enthusiast from his own point of view; but he was simply a revivified Mediævalist, a disbeliever in modern life altogether; and his ultimate failure, comparatively at least, was inevitable from that very fact. Whether such a movement can ever be a real success,—whether the attempt was worth making,—are questions we put on one side for the moment; but if there can be value in a revived architecture, it must be conceded that Scott came nearer the mark than any one else has attained: and that what he intended to do he did, and did thoroughly.

It would be of much interest, considering the subject of our article in this connexion, if we could know whether any special influence turned his attention in early years to the special style of architecture which he afterwards studied, and worked out with such success. On this point we have no definite information; but, from the analogy of similar cases, we should surmise that the bent of Scott's mind towards the Gothic style was what, so far as his training was concerned, might be called accidental, and that, in fact, he was carried along in obedience to that unaccountable impulse by which, as it seems, at certain stages in human history, there arises a general fervour in behalf of some particular phase of artistic or intellectual development, the precise origin of which it is impossible to trace. The secret of the success of Scott's career was, that he, partly from inherent talent, partly from the fortunate circumstance of entering on his professional life on the flood-tide of the new spirit in architecture, was the man able above all others to take advantage of that tide, to turn it fully to account, and to sail into prosperity on its current. Almost every such movement in art and science finds out such a man,—the man best qualified at the moment to make the most of it. Railway engineering would have progressed far more slowly than it has done but for George Stephenson; but, on the other hand, it is quite possible that, had not Stephenson been born just at the time when everything was ripe for the great new experiment in locomotion, he might have passed through the ordinary term of life unknown to fame; and so we may perhaps say of Scott and the modern Gothic revival. The movement owed much to the man; but the man also probably owed much to the movement.

We have, however, evidence that Gilbert Scott commenced at a very early age to draw and sketch from buildings, and we distinctly remember that on one occasion, which we are unable to fix more particularly at this moment, he himself mentioned, either in writing or in an address, a characteristic trait of his early admiration for Gothic architecture; namely, that when on the way to and from his school the coach stopped at York, he always contrived to get a run round the Minster during the short time allotted for the stoppage; and he has also himself stated that from the earliest time he began to sketch, he always drew by preference from Gothic buildings, though no one had told him or advised him to do so.

In the brief biographical statements which have appeared in some of the daily papers, one point of interest in regard to his family history and connexion has been overlooked. That he was born in 1811, at Gawcott, near Buckingham, that his father and grandfather were clergymen, and that the latter was the Scott who wrote a once famous "Commentary on the Bible," are biographical facts which it is right also to put on record in these pages; and perhaps the fact of his clerical descent may have had an hereditary influence in determining his taste towards what was in its original form a specially ecclesiastical architecture.* But what is much more to the point is, not that

* It must be remembered, however, that Scott himself was much averse to hearing Gothic architecture spoken of as especially a church form of architecture. His position was, emphatically, that it was *the* English style, suitable for all purposes equally.

his ancestor wrote a Commentary which had a high standing in its day, but that the said author of the Commentary was a man of remarkable self-denial, application, and firmness of purpose, who rose from a comparatively humble position, carried on his studies as a youth along with farm duties, and achieved the opportunity of securing his degree and ordination at the expense of unremitting toil and rigid economy. Those who are interested in tracing the subject of hereditary character, upon which so much light has been thrown recently, may see in this trait of the grandfather the forerunner of the firmness of purpose and concentration of study which enabled the grandson to build up his fame and success.

In consequence of his boyish interest in sketching architectural subjects, Gilbert Scott was placed with an architect, Mr. Edmeston, father of the gentleman of that name who is now well known as a practising architect in London. It does not appear, however, that his special taste in architecture received at this time much development or encouragement from outside. The articles were signed April 10th, 1827, a time when "Stuart and Revett" was in the ascendant, and we must conclude from the rather meagre information at present available in regard to his early life, that his continued study of Gothic architecture was carried on in response to his own predilection, coupled with the vague but growing preference for it which was then gaining ground in so many quarters. Professional practice he commenced on his own account in partnership with Mr. W. B. Moffatt, a fellow student at Mr. Edmeston's, and it was whilst the "firm" was still carried on that he designed the work which first brought him into notice at all prominently, the Martyrs' Memorial at Oxford. This was in 1841, and a year or two after he built the new church at Camberwell, and was by this time already gaining esteem as a "church architect" in connexion with the great movement for church building which was then in its earlier stage. His wider reputation, however, dates from the time when in 1842 he gained the competition for the rebuilding of the great church of St. Nicholas at Hamburg, a success which, being gained over architects of all nationalities and in a foreign country, gave him at once a higher position than even an equal success on native ground and over English competitors only could have given him. It is curious also that his next large commission came also from over the sea, but this time from far in the opposite direction, being a commission to design a cathedral for St. John's, Newfoundland. These large and important works were in progress for many years, and the latter is still unfinished. An important point in his professional career was the re-building, some years afterwards, about 1854, of the great parish church of Doncaster, which was the largest and most important work he had yet carried out on English ground; and owing to the public interest felt in the matter,—the old church, a large one, having been destroyed by fire (that great friend of the architect),—and the remarkable and up to that time unprecedented success of the new building as a modern reproduction of fourteenth-century architecture, it is probable that this work had a great effect in extending his reputation, and that its acknowledged success was some compensation to him for the vexation he endured from the continual attempts which we know to have been made during its progress to interfere with his views, and to deprive him with the public, if possible, of the credit of his own work.*

In 1849 Scott was appointed architect to the Dean and Chapter of Westminster, an appointment which gave opportunity for, and led to, two of the most interesting works which he accomplished in the way of literary illustration and of restoration respectively; namely, his valuable book called "Gleanings from Westminster Abbey," containing a mass of curious and interesting information in regard to the architectural and archæological history of the building, and his restoration of the beautiful chapter-house. This latter piece of work may be truly called one of national interest; and the contrast between the chapter-house as it was, a dilapidated chamber lumbered with shelves and presses, and its present state as one of the most beautiful of ancient Gothic interiors, ought in itself to go far in reply to what has been urged against him in regard to his having injured the value of Mediæval monuments by restoration; but on this head a word just now. So far as our biographical notes go, we cannot here do more than touch in succession upon the leading incidents of Sir Gilbert Scott's professional career; anything further is precluded by considerations of space and by the want of detailed information which could only be procured from private sources more at leisure. The next important step we have to note is his election as an Associate of the Royal Academy in 1855; and the same year brought him double honour, since he again gained a competition open to architects of all nations, for the Hôtel de Ville and Senate House for Hamburg; which buildings, however, have never as yet been carried out. In 1859 occurred the competition for the Foreign Office designs, an unhappy example of the strange way in which such things are mismanaged and worked up into all sorts of confusion in this country, through wire-pulling and private influence with legislators. The whole case must have been a distracting one to those most concerned; and that Scott's health and spirits suffered painfully from the anxiety and contention over this matter we know well. He in the first place got the third premium for the design, but nevertheless was selected to carry out the work; in fact, there seems to have been something strange and uncanny about the whole of the arrangements, for the first-premium design never had a chance, we believe, of being actually carried out. Then, after Scott had thus, to all appearance, come off victorious, ensued that remarkable display of æstheticism on the part of a certainly not essentially artistic Prime Minister, which ended in the architect being forced to abandon the style in which he had worked all his life, and to which he had pinned his faith, and to take up one to which his whole artistic conscience and sympathies were opposed; and, to add insult to injury, he had the gratification of seeing Lord Palmerston thanked by a special deputation for the part he had taken in opposing the Gothic design. He felt this fact very sorely, and always declared that the "deputation" was a got-up thing,—only procured by canvassing. The carrying out of Scott's original Gothic design,—which had great merit, and points which were then especially of some novelty in English Gothic, and some of which (his external treatment of the stairs, for instance) have been imitated since,—would have been an interesting example of the application of modern Gothic to a civil and partially domestic building on a great scale; and even if doubts had been entertained as to its success in this application (and whether we ourselves agree with Lord Palmerston in principle or not), it could not have failed to be more successful than the building which Scott produced, as one may say, against his will, and contrary to his judgment. There are, however, originalities of detail in the Foreign Office as it stands which are worth attention; and the Parliament-street front, it must be remembered, has never received the finish over the angles which the architect intended, and which would materially improve its appearance from the street side.

In 1861 Scott was elected a Royal Academician. In 1866 he was selected as one of the architects invited to compete for the greatest building that has been carried out since the Houses of Parliament,—the New Law Courts. His selection as a competitor was, it need hardly be observed, a matter of course; and though he was not successful in this, which would have been the greatest single professional prize of his life, there can be no question that the place he took in the competition, especially in regard to design, was one by which his credit was increased in the eyes of those best able to judge. His design had remarkably fine points: the Strand front was very dignified and grandiose in effect, and, moreover, showed some very new and original feeling in the treatment of Gothic architecture; and it is within our knowledge that its merits elicited warm admiration from members of the architectural profession who had generally posed as his opponents or rivals, both among those who were and those who were not competitors. It may be worth while to mention that the library of the Institute of Architects contains a handsome volume of photographs from this set of drawings, presented by their author.

Soon after he was made an Academician, Scott was selected, by the special wish of the Queen, to design the memorial to the Prince Consort,—one of the works which has brought him most prominently before the popular mind, as it has, in fact become one of the recognised "sights" of London. It followed naturally upon his connexion with this work that he should have the honour of knighthood conferred upon him, and there can be no question that the position he now and for some time previously had occupied in the profession rendered him the most fitting recipient of an honour which in such cases is to be partly regarded as conferred upon the whole profession in the person of its most distinguished member. In 1873 he was elected President of the Institute of British Architects,—an honour which we thought at the time he might have fairly expected at an earlier date. He filled the post for two years; but his health at this time was rather failing, and he had to be a good deal abroad in search of renewed strength. This he in a great measure acquired, and he was able again to enter the lists successfully in a large and important competition, that for the new Cathedral for Edinburgh, which is now in progress from his designs. His death, which, as already mentioned in our last, took place on the 27th ult. (at Courtfield House, South Kensington, where he had recently purchased property and taken up his residence), was very unexpected, and took place after a very short illness which had appeared to threaten nothing serious at first. The evening before his death he was in excellent spirits, and discussed with a confidential assistant some contemplated changes and re-arrangements in the office. It is worth noting, too, that the last thing he wrote was a cheque to relieve the distress of a brother architect. Sir Gilbert had married, it may be here mentioned, in 1838, Miss Oldrid, daughter of Mr. John Oldrid, of Boston, Lincolnshire. Lady Scott died in 1872. Two of Sir Gilbert's sons, Mr. George Gilbert Scott and Mr. John Oldrid-Scott, as most of our readers are aware, follow their distinguished father's profession, and have already gained a name and place in the ranks of rising architects; the first-named gentleman, it may be noted, has left the Mediæval flag under which his father fought, and become an apostle of a school of revival of a different tendency.

In estimating the position which Sir Gilbert Scott takes as an architectural artist,—his artistic success as distinct from his merely professional success,—there are two phases of his work to be considered, and which must be regarded separately; his work as an original designer, and as a restorer of ancient buildings. Of the latter portion of the subject we have as yet said nothing, because his work in this way was so multifarious, and so much of it went on simultaneously, that it would be exceedingly difficult to "place" a great deal of it chronologically. But it was, without a doubt, as a whole, the most important portion of his professional career, that of which the results have the widest and most national interest, and that which has excited, especially of late, the greatest amount of controversy; and it is our duty to say a word in the way of impartial criticism in regard to the subject, as between the late architect and his rather unscrupulous detractors. By the latter, who have formed themselves into a Society to protest against restoration, it has been recently asserted that Sir Gilbert Scott had all but ruined the interest and value of the greatest architectural monuments of the Middle Ages in this country by practically making new buildings of them. Now, in so far as that we would not see a stone of an old building touched that could be preserved, we should be with those who are adverse to anything like wholesale uncalled-for restoration. That Sir Gilbert Scott did carry out an enormous amount of restoration work; that he felt peculiar interest in it, and wished for opportunities of restoring old buildings, is indubitable. But before deciding whether he carried this to an unjustifiable extent, it is only fair to his memory to consider his relative position in regard to the subject. Now the fact is, that in the early part of his career Scott was actually the conservative man of the day in this respect. He first put forth, in his pamphlet entitled "A Plea for the more faithful Restoration of our Ancient Structures," a strong and urgent appeal against anything like careless and ignorant tampering with buildings which were a part of architectural history, and probably did more than any one man to promote cautious and careful treatment of them in this respect. He did not start the restoration movement; it was started by others, under clerical

* We have letters from him, in which he asserts that nothing would induce him, with his eyes open, to undergo again the amount of vexation and annoyance to which he had been subjected during the building of that church.

influence chiefly, in accordance with the spirit of ecclesiastical revival, which was then beginning to pervade this country; and the first part which Scott took in the movement was one of protest against the manner in which restoration seemed likely to be carried out, unless some strong opposition were made. The position which he took in the matter will perhaps be best illustrated by one or two of his remarks in the course of the pamphlet in question. He pleaded, in the first place, for a most rigid adherence to the original design and details whenever they could be ascertained; complaining that "the restorer too often preserved only what he fancied, and altered what did not quite suit his own taste." In reply to those who argued that the Mediæval architects pulled about the buildings just as they wanted them, and with no respect to the work of their predecessors, he urged that "our position was totally distinct from that of the ancient architects; they were irresistibly impelled onwards in the "creation of a new style"; we, on the contrary, were striving to awaken an old one. This argument might be questioned on the ground that the method of proceeding which led to the development of architecture in former days, would lead to its further development now; but, at all events, the logic is not that of a destroyer but of a preserver, and he, undoubtedly, carried out himself what he demanded of others. His knowledge of Mediæval architecture, of all its details, its plans, its arrangements, the probabilities and possibilities of every corner of a cathedral, was something quite unequalled (as his most brilliant and successful professional contemporaries will be the most willing to admit); and the manner in which he would traverse an ancient building which had been plastered and galleried and whitewashed up, and point out where something of interest would be found concealed, had all the appearance of intuition;* and where the original design or intention was not so obvious, no pains were spared to get at the meaning of the decayed and half-obliterated stones, to compel the building to yield up its secret; and in this kind of investigation it is only fair to say that he had the good fortune to be assisted by most clever, painstaking, and loyal servants among the clerks of works on his restorations, many of them men who had worked with him for years, till they had become imbued entirely with his feeling and interest in the work, and whose practical sagacity in deducing ancient designs from fragments, seemed, in some instances, to have been completely caught from himself, and almost to equal his own. If, therefore, it were admitted that it was desirable to arrest the progress of an ancient design towards decay, and to re-work it while there were yet data left for ascertaining accurately the nature and intention of the original detail, it can hardly be pretended that Sir Gilbert Scott was not equal to this task in a degree in which no one else was. And we may add our implicit belief, founded on our personal knowledge of him, that he was incapable of putting on to an old building any feature which was a pure invention of his own; for the authenticity of which he did not believe that he had found satisfactory evidence. The question is, of course, how far was it desirable to do this at all? Was it, as his opponents say, a wanton removal of the real value and truth of the ancient buildings as historic and archæological records, a confusion of genuine Mediæval work with imitation work, such as would tend to falsify them for future generations and injure their poetic interest for contemporaries? And a calm judgment must admit that to the latter part of the question it is difficult to give an answer in the negative. As regards the present, there is no doubt that to the artist and the poet, to those to whose minds the great Mediæval buildings are hallowed as genuine records of the work of generations long since passed away, a restored building has lost the greatest part of its interest, at least when the restoration is so extensive as to amount, for example, nearly to a re-casing of the building. It is probable that in process of time the restored work, although its distinction from what is unrestored is perfectly marked while the work is new, will be liable to be confounded a good deal with what is not restored, and that the very excellence and exactness of the reproduction will tend to this result; but at the same time, we must point out what has been rather unfairly overlooked, that in his later restorations especially, Scott was very careful to preserve, in all cases, such portions of the original moulding or ornamental detail as were least dilapidated, as evidence of the original work and authority for the restored portion. Coming, however, to the abstract propriety of the proceeding, we say at once that in the case of a building ruined and no longer of any practical use, the only justifiable course is to prop it up and preserve it *in statu quo* as well and as long as possible. But the case of our cathedrals and churches is different from this. Those one-sided people who would apply to them the same treatment which would be right in the case of a ruined monument, seem persistently determined to ignore the fact that these buildings are still in practical use; that, owing to a modern movement, the reality and extent of which are unquestionable, they have actually come much more into use than they have been for two or three centuries; and that, therefore, it becomes a perfectly legitimate object not only to keep them in repair, but to beautify and revivify them. The objection that all this re-decorating and restoring of churches is contrary to the spirit of the present day, is utterly futile, for the fact that the country has been willing to spend millions of money on it is itself an indication of "the spirit of the day," and a proof that what has been done is what a great proportion of people (rightly or wrongly) wanted to have done. The cathedrals would have been restored whether Sir Gilbert Scott had existed or not; but without his learning and care they would in most cases have been much worse, and much more incorrectly restored than they are; and if the views of those who object to all restoration were carried out to the letter, a great many of the ancient buildings would by this time have been lost altogether, and others would be so in no very long time. That Scott carried restoration further than was really necessary or desirable in some cases, we do consider; but we deny altogether that, in doing so, he was actuated by the selfish motive which uncharitable opponents have imputed to him. We know of no reason for thinking thus of him, except the accusations of persons who were jealous of his position, and who would, perhaps, have been glad to have themselves some of the commissions which they satirised him for carrying out. Our impression is that the key to Scott's action in this matter of restoration was really his intense enthusiasm in the cause of Gothic revival, and an over-mastering interest in the unquestionably fascinating work of putting new life and brightness into an ancient and mouldering structure; forcing it to tell its secret, and acting as its interpreter to the modern world. That he did this in a most remarkable degree in many cases every candid person must admit. Under his hands the history of a cathedral came out stone by stone; relics of previous structures, the existence of which was never before suspected, emerged to the light, and special means were taken to preserve them, and render them accessible and obvious to future generations, so that the history of the various stages of the building could be read like a book, in a manner that was never before possible. And as to the actual process of cutting out and renewing old work that was decaying, we have not a shadow of a doubt that could Scott have found any infallible process for preventing any further decay, he would thankfully have used it in preference to substituting new work. Among his numerous letters to us we have one calling our attention to the chemical process employed twenty years ago for arresting decay of the stone in the Royal monuments in Westminster Abbey, and expressing his hope that in due time he would be able successfully to press upon the chapter "the importance of applying it to the interior of the building itself, or at least to its decayed portions, which in a very few years will be so far gone that the workmanship will be obliterated." This did not look like the recommendation of a man who wished for a great "job" in restoration merely for its own sake, which is the character that some of his critics have not scrupled to give him. That his work on an ancient building not unfrequently brought out not only archæological facts, but architectural beauty long hidden under a veil of defacement and degradation, we have no hesitation in asserting. A striking instance of this was afforded in the case of the interior of Tewkesbury Abbey, of which the eastern half was restored first, while the greater part of the nave was left in the condition to which the neglect and whitewash of the eighteenth century had brought it. Any one who could study the nave as it was (and we believe still is), and then walk round into the choir and transepts, and survey their effect after Scott's restoration process, and not feel that the architectural effect was heightened and brought out beyond all comparison, must have been beyond the reach of argument: and indeed argument has hardly been the strong point of his opponents. They have dealt more largely in declamation, at times somewhat hysterical in character, at times ill-natured, abusive, and, in the case of some persistently repeated journalistic attacks, we should say distinctly and emphatically libellous, and redounding only to the discredit of those who employed it. Of his many works in restoration we cannot now speak more particularly: all the principal ones have been from time to time recorded and commented upon in our columns, and many of them illustrated by us. They included the cathedrals of Ely, Exeter, Worcester, Peterborough, Salisbury, Hereford, Lichfield, Ripon, Gloucester, Chester, Rochester, Oxford, Bangor, St. David's, and St. Asaph. Among these, Exeter and Worcester have always appeared to us to be among the most completely successful restorations which he accomplished. At the time of his death Scott had been for some years employed over the gradual restoration of St. Alban's Abbey, in which he was greatly interested, and which presented unusual practical as well as architectural problems for solution. His boldy conceived plan for forcibly putting the walls straight has yet to be carried into execution.

In estimating the position of Scott as an architect of original buildings, we cannot but see that in the early part of his career he was really in the main almost entirely a reproducer of ancient Gothic work. So far was this the case in his earlier career, that the possession of real architectural genius has been sometimes denied to him, even by those who had a strong admiration for his achievements as a restorer. And there is some foundation for this idea even in the style of those later and more important works in which he went out of the groove of mere learned imitation. We remember hearing a piquant criticism by an architect who thought that Scott's design in the Law Courts competition had not received due appreciation, to the effect that the design had far more dignified qualities than some which had been put before it; that, in fact, its author only "wanted a little more *devil* in him" to be the greatest architect of the day. The blunt expression indicates what was, at all events, a characteristic of his work, whether we regard it as a deficiency or not. Ruskin's "wolfish" element had no place in Scott's Gothic design. In fact, the majority of his original designs, for public buildings especially, are so symmetrical and balanced in style and effect, that it might be said that his architectural feeling was in some respects rather Classic than Gothic, in spite of his generally faithful adherence to Gothic forms and details. Thus, his Hamburg Hôtel de Ville design recalls to us a little, by the proportion and form of its spire, built on a square plan, the Halifax Town-hall of Barry, in which this form of spire was applied to a Classic building; and really, if we compare the two buildings, we find that the design of the Gothic architect, with its central spire and tower, and absolutely corresponding wings, is almost the more "Classic" of the two in general grouping and outline, more so, certainly, than the Classic Barry's Houses of Parliament, to which, nevertheless, Pugin denied the title of Gothic, calling it "Tudor details on a Classic body." It is, on the whole, with gratification that we call attention to this symmetrical and balanced character in Scott's architecture, since it is a practical contradiction of an idea which has been too much favoured of late, that Gothic architecture necessarily means wild and irregular design, and a complete sacrifice of uniformity, and the stateliness of character which arises from it. Yet, when treating a small building to which the picturesque element seemed naturally suitable, he could alter his method and adopt the picturesque, as in his charming little Cottage Hospital at Savernake, one of the prettiest little buildings of the kind that we know. In turning over the works by Scott that have been illustrated in our pages (a complete list of which will be found further on), we note, among these,

* On the other hand, the fact that *any* study of buildings so far removed from our own day does enable a student to predict their peculiarities in this almost unerring manner, is a remarkable illustration of the spirit in which architecture was carried on when these buildings were erected,—the almost entire absence of individual caprice in their design and arrangement. What future restorer will ever be able to predict what was intended in any half-ruined or defaced building of this generation?

interesting suggestions and memoranda of his course in the development of his art, and of the gradual changes in his manner of designing which are found towards the later portion of his career; and which, though not strongly marked or violent, are, nevertheless, sufficiently important to make it manifest that his method had undergone a continuous development. In his early churches he had evidently a settled partiality for the Decorated style, just at the period when the geometric window tracery had become elaborated, but was still geometric. In this style, in its pure form, Doncaster Church was designed; and the Gothic Foreign Office design was based upon Decorated work, but with less employment of tracery than he would have used in a church. In Walton Hall, Warwickshire, however, built in 1860, the pure Gothic type was abandoned, and a modified form, which may be called Modern Domestic Gothic, with square-headed windows, was adopted. This building, coming only two years after the publication of his book on "Secular and Domestic Architecture," may be taken as an example of his way of putting into practice the object which he theoretically propounded in that book, viz.,—"the construction, on a Gothic basis, of a new palatial style" for residences; it is not quite on a large enough scale, certainly, for the word "palatial" to apply in its fullest meaning, but still it is a good example of his application of Gothic to a large modern residence. The book just referred to has, we fear, lost its interest: writing was at no time Scott's strong point, and his view of the all-sufficing capabilities of Gothic architecture, and still more his entire depreciation of the Classic mansions of England, as forbidding in appearance and unsuited to their surroundings, must have appeared one-sided, even when the book was first published, and would be thought doubly so now. Among his more recent churches that of St. Andrew's, Hillingdon, Middlesex (1864), is a specimen of a change of manner, a partial concession to the prevalent feeling in favour of a more Continental type of Gothic, and of the employment of an earlier (thirteenth century) phase of Gothic architecture. The divergence is, in fact, so far marked, that those who knew Scott mainly by earlier designs would hardly have attributed this one to him. We notice, also, in the Law Courts' design, a great deal of admixture of French Gothic feeling in the detail; it was hardly possible, in fact, that any one practising Gothic architecture in England of late years could be entirely free from this influence. In the large chapel of St. John's College, Cambridge, it is most marked; though in the design for the Edinburgh Cathedral, one of the finest and most thoroughly satisfactory things which Scott ever produced, the English type is returned to in a great measure, but no longer the full Geometric style; this Scott seems to have almost entirely discarded of late years, like so many of his compeers, in favour of the simpler and more solid form characteristic of Early Gothic. In the design which he submitted in 1875 for the German Parliament House, in which he obtained one of the five premiums offered, he struck out quite a new and original path, aiming confessedly at the development of a German style which had never really appeared, a fully-matured Pointed style founded on German elements, and representing what he considered German architecture might have arrived at, had it followed a course analogous to that which English architecture followed, working out a Pointed architecture from the Round architecture, instead of allowing its course to be interrupted by the incursion of the French style which the Germans adopted, and spoiled in the adopting.* His own remarks on this interesting and original suggestion will be found on page 774 of our volume for 1875, accompanying a large engraving of the design, which is a very fine and impressive group of building on a great scale, with a grand cupola as the central feature; the combination of this feature with Gothic architecture being a subject which had great interest for him in the latter part of his life. Some very fine drawings of this design were in the Royal Academy Exhibition in 1876, and received due notice from us. It appears to have so far impressed the German authorities that they—selected him to carry out the work? No: but they advertised a second competition, to be confined to German architects.

Besides the great buildings we have briefly alluded to, Sir Gilbert Scott not only executed an immense number of smaller works, but was largely employed in more strictly ornamental design: on such works as monuments, reredos, metal-work screens, &c., for various churches. A number of these, some of which were of very beautiful and elaborate design, have been illustrated by us at various times. Among these may be mentioned the reredos in Westminster Abbey (which has from its position commanded much attention, but which we do not ourselves consider to be one of his most admirable works of this order), those of St. George's Chapel, Windsor, of Lichfield and Exeter Cathedrals, the screen at Worcester Cathedral, besides organ-cases, and many other adjuncts of church decoration. In his reredos designs he usually worked in conjunction with a sculptor, for whose figure-designs he furnished the architectural framework. His central and crowning effort in decorative design was, of course, the Albert Memorial, in which his object was to produce a "shrine" on a great scale, and to combine in this work the assistance of all the arts and methods of decoration which may be regarded as subsidiary to architecture. This gave a great impulse at the time to art-workmanship, and much beauty of decorative and coloured detail is doubtless embodied in this work; but it is our duty, as representing the interests of solid and real architectural design and construction, to say that, in this one instance, Scott, who usually so piqued himself upon truthfulness and solidity of constructive design, made a decided lapse in erecting a monument which would be unstable if its construction were really what it appears to be, and which is in reality kept in safety by concealed iron girders. It is difficult to us to understand what strange momentary aberration of the true architectural faculty induced Scott to adopt such an expedient; it was one of the two decided mistakes in his great career of success: the other being his giving way in regard to the style of the Foreign Office. No doubt, in the then temper of the Government, had he stood out he would have run a strong probability of losing the building altogether, and it may be said that it was not in human nature to do this. That is as it may be; but the argument goes for nothing, because in his own best interests it would have been his wisest course. He could well have afforded the risk of losing it; and in standing to the artistic principles he had proclaimed all his life, at any cost, he would have established a principle and gained a degree of honour and credit which would have far more than compensated him for any pecuniary loss. The fact of his giving way was never forgotten by many, and was quoted to his prejudice to a degree which was not fair, considering how very few would have done otherwise. Still, we always regretted that he did not take advantage of his position in the profession to make a stand, which would have been a noble example, if he had made the sacrifice, to his successors in the younger generation of architects, for whose benefit alone we here for the last time refer to the point, to convey a moral lesson; for it is a curious fact that this building, erected against its architect's own strongly-enforced principles, has been an unfortunate one in every way, and is the only one of his works of which such an assertion could be made. Before quitting our remarks on his professional career, we may note the fact also that Scott was concerned in important buildings of a practical nature as well as in those of which the interest was more purely architectural; the Leeds Infirmary and the Preston Town-hall may be mentioned among these: the former is a very good example architecturally of the application of a simple type of Gothic to a building of this class; and its planning and sanitary arrangements have received a fair amount of commendation. Among his smaller works of the more artistic class, Exeter College Chapel, Oxford, was one of the finest, and was a great favourite with its architect, who, in a letter written to us at the time, referred with great pleasure to the warm praise which the building had elicited from Sir Digby Wyatt, not generally an enthusiast in regard to modern Gothic work.

In referring to Sir Gilbert Scott's literary efforts in illustration of his art, we ought not to omit mention of his lectures delivered at the Royal Academy. These were delivered in short courses, and at rather scattered intervals, owing, probably, to the little time available to him for preparing lectures. The first course was delivered in 1868, on Early English architecture; another course in 1870, chiefly on vaulting; and the last, a very interesting course, in 1873, on the dome; specially interesting as the thoughts of an essentially Gothic architect on a grand feature in architecture which is generally regarded as more specially classic, but which Scott considered as the greatest feature in architecture, and as essential to the final completion of a great style; and the possibility of its successful adaptation to the pure Gothic style was a favourite subject with him. All these courses of lectures are to be found reported in full in our volumes for the respective years above named.*

It is almost needless to observe that Sir Gilbert Scott's office in Spring-gardens was the centre of a great deal of architectural activity represented by the younger and rising members of the profession. To have been in Scott's office was a very important step to a good position for a young architect starting on his own account; and unless the disciple were really very deficient in ability (in which case, however, he would probably hardly have found his way into the Spring-gardens Academy), the claim to the respect of his clients was founded on something more solid than the mere name of having been with a distinguished architect. The office became, in fact, a kind of school of clever young men, a good many of whom are now honourably known in the profession, and some of whom have attained a very high position in it. It will be seen in our report of the special meeting at the Institute on Monday evening, in what terms some of the old pupils spoke of the kindness and courteous demeanour of their then master to them. And in connexion with this subject we may allude to the mistaken idea, as we have good reason to believe it to be, that Scott in his later days, and when he was so full of important work, did a large portion of his work by proxy, and that, in fact (as some persons we know imagined), when you went to Scott for a building of ordinary size you merely got the work of Scott's head draughtsman for the time being. There are no doubt stories, one or two of which we believe are authentic, of the eminent architect seeing a building which had been his own work and not knowing it. But we could cap this in other branches of study, among people who have played a large part in the world. Only the other day we heard of a very eminent man of science suggesting to another scientific friend in conversation, as a new point, something which he had worked out in one of his own early publications and had quite forgotten. Those who sneer at the idea of Scott not knowing his own building do not probably realise what it was to have buildings going on all over the country at once for a whole lifetime. But we have indisputable evidence from those who have the very best means of knowing, that Scott looked personally after all his works in the office, even if he hardly had time to visit them all; and that even comparatively insignificant detail drawings passed under his eye and received his approval or corrections.

In personal appearance and manner Sir Gilbert Scott did not convey the idea of a man who was playing so large and busy a part in professional life as he actually did. Of middle height, he had a fine head with a squarely-formed chin, indicative of firmness of character; but his manner might be described in the epithets in which Goldsmith described that of Reynolds (also, it may be noted, a great worker), as "gentle, complying, and bland"; and we remember often wondering how he could preserve a manner so quiet, easy, and undisturbed in the midst of all the enormous amount of work he was doing, and which would have kept some men in a continual hurry and bustle. This becomes the more extraordinary when we consider that he was, as we had ample means of knowing, in reality a peculiarly sensitive, and what is vulgarly called a "thin-skinned" man, and suffered keenly, not only under the public attacks and criticisms which every public

* It is worth notice that Mr. Fergusson also laments over this interruption of the development of German national architecture by "French invasion," but that this regret is that the Germans did not mature a complete *round*-arched Gothic style.

* These lectures are shortly to be published by Mr. Murray, who now has half in the press, and the delay before the two volumes can be issued will be caused solely by re-drawing the remaining illustrations. Mr. W. S. Weatherley writes from Spring Gardens:—"For more than a year Sir Gilbert has superintended this work. Scarcely three weeks ago he revised and added notes to his eighteenth and last lecture. The afternoon before he died he saw fifty or sixty illustration proofs, to all of which he gave his unqualified approval, desiring me to inform Mr. Murray of this the next day."

man must expect, but under the annoyances and trials of that perhaps worse evil, of private and meddlesome "patronage." Some of those who considered themselves his friends and admirers, or who at least have assumed that attitude since his death, we may perhaps charitably hope never suspected the intense vexation and pain which they had caused him at different critical periods during the carrying out of some of his most important works. On the other hand he made, we believe, many warm friendships, and was a gentle and kindly-hearted man. Of his simple and naïve kindness of feeling the very last among the many letters the conductor of this journal in a private capacity received from him is an interesting instance; it was called forth, as will be seen, by a threat of depriving the young people in his neighbourhood of one of their recreations; and we give it entire, with the rather oddly interspersed notes of interrogation, &c., which indicate the strong feeling with which he wrote:—

"Courtfield House, Collingham-road, S.W.
Jan. 22, 1878.

I only last evening heard, to my dismay, that a movement was being made to induce our ground landlord to forbid the gardens of Courtfield-gardens being used by the more youthful inhabitants for lawn tennis!

As holder of the leases of two of the houses, I take the liberty of expressing to you, in the most emphatic manner I am able, my heartfelt dissent from such a proposal!

I seldom myself enter the gardens, but having after many years' residence in more rural positions come to live at South Kensington, these gardens, as viewed from my windows, are (so far as country reminiscences go) my 'sole remaining joy,' and one of my greatest pleasures is to see how thoroughly they conduce to the happiness and enjoyment of the younger inhabitants, whose innocent and elegant disports it is always a solace to witness.

I do not envy the man who would desire to deprive a number of young people of this almost only semblance of country pleasures which our overgrown city affords—the one thing which it retains in common with the country! What! are smooth, untrodden grass-plots to be preferred to those which are well trodden by the light feet of our children and grandchildren?! Are gardens made only to be looked at, and not to be enjoyed?! Shame—shame! on the man who would advocate so selfish a doctrine. *I do trust* it will be treated as it deserves, by one who has done so much for the public as you, my dear Mr. ——."

While looking over his letters, to one or two of which we have previously referred, we may quote another, written a good many years ago, which is interesting as showing that, like most other able and successful professional men, he had thoughts and interests beyond the limits of his profession:—

"Sea View, Near Ryde,
July 29th, 1856.

I send you a communication quite of a different kind from those with which I have heretofore troubled you. If you think it out of place in your pages, will you kindly return it. I believe the fact that the moon's motion would be equally accounted for by a rotation round any other parallel and travelling axis as round its own is new to the public, though, of course, not to the *savans*; and it is obscurely hinted at by Professor Airy. I only pointed it out to show that the usual deduction from her complicated motion is not self-evident. My attempted explanation of the origin of the moon's "nutation" may be an old story, but I have not seen it suggested in this controversy. It seems to me the most probable and straightforward hypothesis. You may be surprised at my dabbling in such questions; but, though not an astronomer, I am an old geologist, and have long amused myself in speculations on cosmogony."

Sir Gilbert Scott's portrait is to be found in the *Builder* for 1869, p. 626; but we feel bound to admit that our artist was not so successful with it as with some others of the portraits of leading architects which we gave at that time. That which was painted by Mr. Richmond for the Institute of Architects, and which at present occupies the post of honour over the presidential chair, is a good likeness; the best, perhaps, in that not very satisfactory gallery of portraits.

Among the Institutions in which Sir Gilbert Scott took the greatest interest was the Architectural Museum in Tufton-street, which, in fact, almost owes its existence to him; and at which he on several occasions took great trouble and interest in lecturing upon the casts and explaining them to audiences of working men, who were delighted with his simple and unaffected manner of addressing them on subjects which he had made so thoroughly his own. Unaffected and simple, indeed, he always was; and there are few instances of men achieving so brilliant a professional success and assuming so little on the strength of it. We must now, however, close our *in memoriam* comments on the man and his career; but we make this reference to the Architectural Museum the last, because it leads to a suggestion with which we may very suitably close, viz., that no way of specially commemorating him as an architect could, as it appears to us, be more suitable and more useful, and in accordance with what he himself would have wished, than the expenditure of a sum of money in rearranging, enlarging, and improving the Architectural Museum in which he took such interest, and extending its scope and its usefulness, with his name attached to its title. This idea was suggested casually at the Institute meeting, though not on that occasion formally canvassed. It seems to us by far the best which has been proposed, and we give it our cordial support, and hope the idea will be adequately carried out as a perpetual commemoration of George Gilbert Scott and his life's work.

The following is a complete list of the works of Sir Gilbert Scott which have been illustrated in the *Builder*. The figures in parenthesis denote the dates of the volumes, the other figures are those of the pages on which the illustrations will be found.

Additions to Churches.—Chancel of Camden Church, Camberwell (1854), 363; Porch of St. Michael's, Cornhill,—in conjunction with Mr. W. A. Mason (1857), 175.

Albert Memorial, Hyde Park (1863), 371; (1873), 926.

Albert Memorial Chapel, Windsor (1875), 620.

Bishops' Thrones.—Chester (1877), 210; Oxford (1877), 810.

Cathedral Church of St. Mary, Edinburgh, now in progress (1873), 106, 167; (1874), 1032; (1875), 51

Churches.—Ealing, Middlesex (1852), 441; Rugby, Holy Trinity (1853), 345; Hamburg, St. Nicholas' (1858), 439; Richmond, St. Matthias' (1858), 535; Stoke Newington, St. Mary's (1858), 619; Doncaster, St. George's,—rebuilt after fire (1858), 695; Halifax, All Souls', Haley Hill (1859), 729; Hillingdon, St. Andrew's (1864), 633; Kensington, St. Mary Abbotts (1870), 11; (1872), 927; Croydon, St. John's,—corbel and gurgoyle (1871), 761; Walcot, St. Andrew's, Bath (1874), 395.

College Chapels and University Buildings.—Chapel of Exeter College, Oxford (1859), 441; (1862), 497; Chapel of Wellington College, Sandhurst (1861), 773; Chapel of St. John's College, Cambridge (1863), 225; (1869), 386; Glasgow University buildings (1870), 967; additions to New College, Oxford (1872), 827; the Sir Cowasjee Jehanghier Hall of the University of Bombay (1876), 13.

Hospitals.—Leeds Infirmary (1864), 117, 154; Cottage Hospital, Savernake, Wilts (1873), 186.

Monuments.—Westminster Column, Broad Sanctuary, in memory of the Westminster scholars who fell in the Crimea (1858), 694; Duchess of Gloucester's monument in St. George's Chapel, Windsor (1860), 233; Earl of Ellesmere's monument in Worsley Church, near Manchester (1860), 593; Viscountess Canning's monument, Calcutta (1864), 953; Earl of Elgin's monument, Calcutta (1868), 913; Conington monument, St. Botolph's Church, Boston (1873), 606; Bishop Wilberforce's monument in Winchester Cathedral (1875), 416; Clarkson monument, Wisbech (1875), 909.

Public Buildings.—Rathhaus, or Hôtel de Ville at Hamburg (1856), 63; Competition design for the Foreign Office, to which a premium was awarded, also for the Foreign Office (1857), 495; Design for proposed new Foreign Offices (1859), 537, 601; New Foreign Office, park front, as erected,—in conjunction with the late Sir M. Digby Wyatt—(1866), 525; Preston Town-hall (1862), 621; Design for the New Law Courts (1867), 225; New Colonial and Home Offices, Parliament-street (1874), 525; Premiated Design for German Parliament House, Berlin,—in conjunction with Mr. John O. Scott—(1875), 776, 820.

Pulpits.—Doncaster Church (1862), 910; St. Matthias's, Stoke Newington (1868), 410; Croydon, St. John's (1871), 766; Worcester Cathedral (1874), 988; Durham Cathedral (1876), 1048; Chester Cathedral (1877), 1006.

Reredoses.—St. George's Chapel, Windsor (1863), 189; Lichfield Cathedral (1864), 865; Boxgrove Church, Sussex (1867), 451; Westminster Abbey (1867), 821; Worcester Cathedral (1868), 731; (1874), 373; Gloucester Cathedral (1873), 147; Exeter Cathedral (1874), 10; Chester Cathedral (1876), 904; Salisbury Cathedral (1877), 239.

Screens.—Choir screen and gates, Ely Cathedral (1851), 451, 498; iron screen and gates, Westminster Abbey (1856), 558; chancel screen, Exeter Cathedral (1876), 463.

Miscellaneous.—Infant Orphan Asylum, Wanstead,—in conjunction with Mr. Moffatt,—(1843), 458; Entrance to Messrs. Gray & Davison's Organ Factory, New-road (1853), 747; Houses in the Broad Sanctuary, Westminster (1854), 115; Walton Hall, Warwickshire, the seat of Sir Charles Mordaunt (1860), 561; Chapter House, Westminster, as restored (1872), 107; Chambers, Lincoln's Inn (1873), 947; choir-stalls, Exeter Cathedral (1875), 975, organ gallery and case, Chester Cathedral (1876), 760.

On another page, at the cost of some little repetition, we have given a complete list of all the buildings with which Sir Gilbert Scott had been connected since 1847; previously to that date no materials for such a list, as we are informed, exist.

KENSINGTON AND ITS GARDENS.

"Rus in Urbe" was the motto which the Duke of Buckingham fixed in golden letters on the garden front of his house in St. James's Park; and in a similar spirit Lord Lanesborough inscribed on his house at Hyde Park-corner (now St. George's Hospital) the quaint couplet:—

"It is my delight to be
Both in town and country."

There is but little rural appearance in either of these places now, and we must travel farther from the centre of London to find such a union of town and country. The *rus in urbe*, however, is to be found in its most agreeable aspect in the glades of Kensington Gardens, and when the trees are in leaf, it is not easy for the visitors to its walks to imagine themselves near a great city. Kensington is a village of considerable antiquity, which appears to have been in Saxon times the mark or allotment of the family of Cenesingas, and is mentioned in Domesday Book as *Chenesitum*. It retained its ancient aspect until quite late years, and gloried in the name of the "Old Court Suburb," but since the time of the Exhibition of 1851 the builder has been encroaching upon its precincts, and now lofty mansions take the place of the quaint old houses. The two chief houses of the district still remain; these are Kensington Palace and Holland House. We might almost add Campden House, because although it was burnt in 1862, the old character of the place was retained in the rebuilding. Holland House was built in 1607 by the celebrated architect, John Thorpe, for Sir Walter Cope, whose son-in-law, Henry Rich, was created by James I. Baron Kensington and Earl of Holland. From this earl it obtained the name which it still retains, and from which Henry Fox took his title. Addison lived here after his marriage with the Dowager Countess of Warwick, widow of Robert Rich, Earl of Warwick and Holland; and Tickell, in his elegy on the death of the great essayist, apostrophises the beautiful site of the house:—

"Thou hill, whose brow the antique structures grace,
Rear'd by bold chiefs of Warwick's noble race;
Why, once so loved, whene'er thy power appears,
O'er my dim eyeballs glance the sudden tears?"

The interesting associations of Holland House have largely grown around it since it came into the possession of the Fox family, which it did in 1762, when Henry Fox, first Lord Holland, bought it from William Edwardes, Lord Kensington. Walpole called it "a brave old house," and Macaulay said that it could "boast a greater number of inmates distinguished in political and literary history than any other private dwelling in England." Campden House was built about 1612, by Sir Baptist Hicks, a mercer of Cheapside, and afterwards Viscount Campden, who bought the property from Sir Walter Cope, the proprietor of Holland House. Tradition reports that it was not actually bought, but won "at some sort of game." Both houses were used by the Republican party during the Commonwealth. In 1649, just after the Earl of Holland had been beheaded, the Lord General Fairfax made Holland House his head-quarters, and the Sequestration Committee sat at Campden House. The widow of Lord Holland was soon allowed to have her house back again, and it became noted as the chief place for plays to be acted at when the theatres were closed. In Wright's *Historia Histrionica*, 1699, we are told "afterwards, in Oliver's time, they (the players) used to act privately, three or four miles or more out of town, now here, now there, sometimes in noblemen's houses, in particular Holland House, at Kensington, where the nobility and gentry who met (but in no

great numbers) used to make a sum for them, each giving a broad piece or the like."

Pepys visited Campden House with his patron, the Earl of Sandwich, and afterwards went to Holland House, but it was not often that the Diarist journeyed so far from London as the little village of Kensington. It is clear from this that the place was not considered of much consequence until William III., seeking a healthy air, bought Nottingham House and turned it into Kensington Palace, and Macky, in his valuable "Journey through England" (1724), writes,—"Kensington was a small poor village till the Court came there, but now it is become a large town, and in its squares are houses fit for the entertainment of the greatest quality."

In 1652, the house and grounds belonged to Heneage Finch, who became solicitor-general at the Restoration, and was afterwards Lord Chancellor and Earl of Nottingham. In March, 1662, a grant was made to him "of that ditch or fence which divides Hyde Park from his own lands, with the trees, &c., thereto belonging, 10 ft. by 150 roods, from the south highway leading to Kensington to the north highway leading to Acton, with the disparking the same." Finch was not a popular man, and his contemporaries called him *Old Dismal*, from his tediousness and rueful countenance. Dryden drew his character in very dark characters:—

> "At the bar abusive, on the bench unable,
> Knave at the woolsack, fop at the council-table."

King William's asthma prevented him from sleeping in the town with any comfort, and he found at Kensington an air that he could breathe. One of his first acts was to form a broad highway through Hyde Park and St. James's Park, so that he might easily get to Whitehall and St. James's Palaces. At night lanthorns were lighted along the whole length of road, an illumination that gave great delight to the Londoners of that day. When the King and Queen went to Kensington, the Princess Anne followed them, and dwelt for five years at Campden House. Here her son, the Duke of Gloucester, formed a regiment of boy-soldiers that were drilled with great regularity, and kept on constant duty. William III. was not content with Nottingham House as it stood, and he soon began extensive alterations. The building was re-arranged and added to from the designs of Sir Christopher Wren, Surveyor-General, and Nicholas Hawksmoor, clerk of the works. Kent designed the east front, the cupola-room, and grand staircase, the walls and ceilings of which he also painted.

Very shortly after the king had taken possession of his new palace, and while the alterations were being proceeded with, a fire broke out which did considerable damage. This was on the night of the 10th of November, 1691, and the king and queen had to escape from their beds into the garden while the flames were being extinguished. Queen Mary died of small-pox in the palace in December, 1694, and her husband William followed her from the same place in March, 1702. Queen Anne and Prince George of Denmark now took possession of the palace and its gardens. The queen ordered the erection of the Temple or Banqueting House to the north of the palace, from the designs of Sir Christopher Wren, and then gave parties in it to all the fashionable world of London. Kensington Palace was settled upon Prince George:—

> "Or Kensington, sweet air and blest retreat
> Of him that owns a sovereign though most great;"

and here he died in 1708, six years before his wife. Sir Richard Steele, as one of the prince's attendants, sat by his corpse, and afterwards received an annuity of 100*l.* from the widowed queen, who herself died in the same place on August 1st, 1714. Queen Caroline, the wife of George II., who was a great improver both of Kensington Gardens and Hyde Park, died here on November 20th, 1737, and her husband on October 25th, 1760. He was the last king who inhabited the palace.

George III. did not care to live in it himself, and he gave up the house to various members of the royal family. The Duke of Sussex in after years occupied apartments in the palace, where, as President of the Royal Society, he gave receptions to men of science and scholars. The unfortunate Queen Caroline, wife of George IV., lived here for a short time, as did the Duke and Duchess of Kent. Her Majesty the Queen was born in the palace on May 24th, 1819, and when Lord Eldon returned home after attending at the birth in his official position as Lord Chancellor, he took down a volume of Shakspeare and recited these prophetic lines from "Henry VIII.":—

> "This royal infant,—Heaven still move about her!
> Though in her cradle, yet now promises
> Upon this land a thousand thousand blessings,
> Which time shall bring to ripeness:—she shall be,
> But few now living, can behold that goodness,—
> A pattern to all princes living with her,
> And all that shall succeed" . . . . .

The princess was privately christened by the Archbishop of Canterbury on June 24th, 1819, and, as a curious illustration of the above quotation, it is said that the Duke of Kent wished to name his child Elizabeth, that being a popular name with the English people; but the Prince Regent gave notice that he would stand in person as one godfather, and that the Emperor of Russia was to be the other. At the baptism, the Prince, when asked by the Archbishop to name the infant, gave only the name of Alexandrina. The father requested that another might be added. "Give her her mother's also, then; but it cannot precede that of the emperor." The princess was still living at Kensington Palace, with her mother, when, at the death of her uncle, the throne devolved upon her, and here she held in 1837 her first council. The Queen, on her accession, commanded that she should be proclaimed as Victoria alone. The gardens of Nottingham House only occupied about 26 acres, and these were laid out by William III., according to the artificial taste then in vogue. The yews were cut, and holly hedges taught to imitate the lines, angles, bastions, scarps, and counterscarps of regular fortifications, and the result was known as the *Siege of Troy*. Messrs. London and Wise, the once famous gardeners, laid out the grounds, and Addison, in the *Spectator*, styles them "our heroic poets," adding, "It must have been a fine genius for gardening that could have thought of forming such an unsightly hollow into so beautiful an area, and to have hit the eye with so uncommon and agreeable a scene as that which it is now wrought into." George London was apprenticed to Rose, the Royal gardener, and at the Revolution was appointed superintendent of the Royal Gardens. His reputation was very great, and he acted as a kind of director-general of the gardens of England, most of which he visited once or twice a year. Henry Wise was gardener to Queen Anne and deputy-ranger of Hyde Park, and he laid out the beautiful grounds at Blenheim. In most books London is spelt Loudon, because of late years there has been a famous horticulturist of that name, and this persistent misuse of *u* for *n* reminds us of a good story, the hero of which was the great Duke of Wellington. C. J. Loudon wrote to the Duke asking to be allowed to see the beeches at Strathfieldsaye, but his letter was not very clearly written, and the Duke, not knowing Loudon, thought he had a letter from C. J. Blomfield, Bishop of London. He also misread breeches for "beeches," and at once wrote to the Bishop to say that he was surprised at the request, but should be happy to show his breeches whenever the Bishop chose to call upon him. Queen Anne added thirty acres to the north of the palace, but it is to Queen Caroline, the wife of George II., that we owe the gardens as they are at present. She added 300 acres of ground, and formed the round pond and the beautiful vistas of trees that radiate from it. Each of these avenues had its distinct name, as Old Pond Walk, Bayswater Walk, &c. The groves were filled with squirrels, and a large number of tortoises, presented to the Queen by the Doge of Genoa, were distributed about the grounds. Deer remained in the gardens for some time after the commencement of the present century, and we learn from a minute of the Board of Green Cloth, dated 1798, that foxes were hunted here.

Bridgman was the gardener employed in planning the alterations, and he cannot be too highly praised for the result of his labours. He invented the sunken fosse that divides Hyde Park from the gardens; the novelty became very popular, and was called a *ha ha*, from the exclamation of surprise which was supposed to issue from the lips of the pedestrian as he came upon so unexpected a stoppage to his walk. This fosse was partly filled up at its southern end, in 1868. Alterations and improvements have been made in the gardens at various times, by "Capability" Brown, Humphrey Repton, and W. Aiton.

It was not until long after the time that the court ceased to reside at Kensington that these gardens became a public park, and were freely thrown open to pedestrians. Before then they were considered strictly as appertaining to the palace. In the reign of George II., Queen Caroline held a court on Sundays, after morning service, and an elegant rendezvous took place upon the green or lawn in front of the house.

> "The dames of Britain oft in crowds repair
> To groves and lawns, and unpolluted air.
> Here while the town in damp and darkness lies,
> They breathe in sunshine, and see azure skies;
> Each walk, with robes of various dyes bespread,
> Seems from afar a moving tulip-bed."

When the court went to Richmond the gardens were opened to the public on Saturdays, but the company were expected to appear in full dress. Even as late as the year 1795 no one wearing a silk necktie or leather breeches without top-boots was admitted, and private soldiers and sailors, and servants in livery, were also excluded from the sacred enclosure. Kensington Gardens have continued to be used as the fashionable Sunday promenade to the present time, but different walks have been so appropriated. Faulkner, in his "History of Kensington," says "the great south walk leading to the palace is crowded on Sunday mornings in the spring and summer with a display of all the beauty and fashion of the great metropolis, and affords a most pleasing spectacle not to be equalled in Europe." Now the walk from the Bayswater-road to the Kensington-road, across the Serpentine Bridge, is the favoured spot, and it would appear from some amusing lines by Sheridan that this was the case in his day too:—

> "Yet though 'tis too rural,—to come near the mark,
> We all herd in *one* walk, and that nearest the park;
> There with ease we may see, as we pass by the wicket,
> The chimneys of Knightsbridge and footmen at cricket."

It has been suggested in these pages that a large number of the trees should be cut down and more care be taken of the remainder. In the winter, when the boughs are bare of leaves, the decayed condition of some of the timber is very perceptible, and this evil should be remedied; but the clearance should not be so great as was proposed, for one of the chief charms of the place consists in the close forest of trees. When the leaves are out it is possible to fancy oneself far away from town in some country park, as Mr. Matthew Arnold sings,—

> "Scarce fresher is the mountain sod,
> Where the tired angler lies stretch'd out,
> And eased of basket and of rod,
> Counts his day's spoil, the spotted trout."

Hyde Park and Kensington Gardens are distinct in their characteristics, and each sets off the other's fine points. We hope, therefore, that it will be long before the trimness of the flower-garden is introduced in place of the natural beauties which now pervade Kensington Gardens. All lovers of scenery must admire them, and "bits" for the painter are to be found in every direction.

The round pond, with the various avenues radiating from it, and the warm glow of the ugly but picturesque palace of Kensington as a background, is specially pleasing. Then how attractive is the position of the picturesque ivy-covered lodge near the bridge, particularly when its garden is rich with beautiful flowers!

Chateaubriand loved, when here in exile, to stroll along the walks and talk to the French priests from Kensington House. The amount of written praise of the place is large, but we need only make two quotations here. Haydon wrote "in Kensington are some of the most poetical bits of tree and stump, and sunny brown and green glen and tawny earth," and Mr. Matthew Arnold, whose "Lines written in Kensington Gardens" we have already quoted from,—

> "In this lone open glade I lie
> Screen'd by deep boughs on either hand;
> And at its head, to stay the eye,
> Those black-crown'd, red-boled pine trees stand.
> Birds here make song, each bird has his,
> Across the girdling city's hum.
> How green under the boughs it is!
> How thick the tremulous sheep-cries come!"

We must now leave the gardens, and notice rapidly, in conclusion, a few of the numerous celebrities of Kensington. One of the earliest of these was Charles II.'s mistress, the Duchess of Portsmouth, who lived at Kensington House, where the king is said to have visited her shortly before his death. After a long interval, Elphinstone, the spelling reformer, who translated Martial into an "uglyography" of his own, kept a school here from 1776 to 1778. Then came the Jesuits, at the time of the French Revolution; and Mrs. Inchbald died here in 1821, when it was a Roman Catholic boarding-house. Kensington House and Colby House, with many houses, were cleared away to make room for the enormous building erected by Baron Albert Grant.

Swift lived occasionally at Kensington, and

wrote familiarly of the locality in his ballad of "Duke upon Duke," in which he ridiculed the quarrel between Lechmere, the lawyer, then living at Campden House, and Sir John Guise:—

"Back in the dark, by Brompton Park,
He turn'd up thro' the Gore,
And slunk to Campden House so high,
All in his coach and four.
The Duke in wrath called for his steeds,
And fiercely drove them on:
Lord! Lord! how rattled then thy stones,
O kingly Kensington!"

When Sir Isaac Newton was in his last illness, he went to Kensington for the benefit of the air, and at Bullingham House, Pitt's Buildings, he died.

Gore House, which with the adjacent land was bought by the Commissioners of the Exhibition of 1851, and formed the nucleus of the South Kensington estate, has two most incongruous associations. Wilberforce lived in it for thirteen years from 1808 to 1821, when it was the head-quarters of anti-slavery leaders, and the centre of the Low Church party. The Countess of Blessington followed Wilberforce in the occupation, and stayed for the same number of years. She gathered around her a brilliant circle of friends of a very different character from those of Wilberforce. Not far off was Hamilton Lodge, Kensington Gore, where Wilkes occasionally lived. At Kingston (afterwards Listowel) House died, in 1788, the notorious Elizabeth Chudleigh, Duchess of Kingston, and in 1842 the Marquis Wellesley also died there. Talleyrand and James Mill both lived in Kensington-square, and Wilkie painted some of his best pictures in Lower Phillimore-place. Two of our great modern authors are especially associated with Kensington. Thackeray, who has drawn the best picture of the village in "Esmond," died in his own house in Palace Gardens, and Lord Macaulay at Holly (now Airlie) Lodge. This charming retreat, in a bye-lane of Campden-hill, is delightfully described by Mr. Trevelyan in his life of the great historian.

The ugly old church of St. Mary Abbots was taken down, and a handsome new building erected in its place, by the late Sir Gilbert Scott, in 1875–77; the tower, indeed, is still unfinished. Here are monuments to the Earl of Warwick, who was to learn at Addison's bedside how a Christian should die; to the three Colmans, and to James Mill. In the churchyard Elphinstone, the translator of Martial; John Jortin, the vicar; the son of Canning; and Mrs. Inchbald, are commemorated.

Thomas Walker, author of the *Original* writing in 1835, says,—"At Kensington, within the memory of man, on Sunday evenings a bell used to be rung at intervals to muster the people returning to town. As soon as a band was assembled sufficiently numerous to ensure mutual protection, it set off; and so on till all had passed." This was probably about the time that stage-coaches were stopped by highwaymen in the King's-road, Chelsea. Now the traveller on the knife-board of a Hammersmith omnibus seems to be living in times divided by centuries from such an unsafe period.

SANITARY AND STRUCTURAL IMPROVEMENTS IN THE CITY AND EAST QUARTER OF LONDON.

A considerable amount of activity, both as regards the structural improvement and the sanitary requirements of the City of London, is shown to have occurred, during the past year, by the report of the Surveyor and Engineer to the Honourable the Commissioners of Sewers. In seventy-five cases the district surveyors have reported on the dangerous condition of structures. That these reports have had a prompt result appears to be proved by the fact that no single case has been brought before the magistrates. Ten buildings have been shored up, and twenty-four cases of repairs have been certified by the district surveyors as complete. The total number of premises drained within the year was 280; and the detail of this drainage is drawn upon 160 plans, which are deposited in the office of the engineer. 1,579 ft. of sewer have been constructed during the year; of which 920 ft. were upon the line of old sewers.

Improvements of roads by the setting back of frontages, and arrangements for similar improvements, have been so numerous, that the reader who wishes for the details must consult Mr. Haywood's report. The question of the widening of Walbrook at its northern end has met the attention of the Commission; but the subject has been dropped, in consequence of the refusal of the lessee of the vacant ground to name a price for the land required for the improvement. A petition of the wards of Bishopsgate and Portsoken, praying the Commission to form a new street between Bishopsgate-street and Aldgate, upon the line of the Metropolitan Railway Extension, has been refused, upon financial grounds.

The widening of the Poultry having been completed, the Val de Travers compressed asphalte carriage-way pavement, laid in 1871, has been taken up, and replaced with new. The same material has also been used in repaving the carriage-ways of Lothbury, Bishopsgate-street Within, Moorgate-street, and Fenchurch-street. Other streets have been re-paved with asphalte, wood, and granite. The surveyor reports that as most of the main streets of the City are now paved either with wood or asphalte, and the further extension of noiseless pavements seems probable, a large reduction has been made in the number of men who for many years have been employed by the Commission in stone-dressing.

The cost of the public lighting of the City is not stated in the report. This omission might be advantageously supplied on future occasions. From the accounts of the Metropolitan Gas Companies for the year 1876, we derive the information, by means of a little time spent in abstracting the details, that the annual cost of the public lighting of the streets of the metropolis is 251,000*l.* per annum. The prices now charged to the City by the Gas Light and Coke Company for public lamps are 4*l.* 13s. 3d. for lamps of a square shape, consuming 5 cubic feet of gas per hour, and 4*l.* 17s. 6d. for lamps of a circular shape, with the same consumption of gas. The cause of the difference of cost is the greater expense of cleaning and maintaining the circular-shaped lanterns. Connected with this subject is the invention to which we have more than once called attention, of the electric mode of lighting and extinguishing lamps, patented by Mr. St. George Lane Fox. At the discussion at the rooms of the Society of Arts of the paper, of which we gave an abstract in our last number, attention was particularly called by Mr. Braxwell to the very important question of the pecuniary saving to be effected by the invention. It is no discredit to a young engineer that he has been anxious to put forward the scientific, rather than the economical, features of his invention in the first instance. For the ratepayer, however, what is of chief interest as an engineering question, is the certitude of the action of the apparatus. That this may be assured we see no reason to doubt. The sensible plan of dividing a district into a certain number of circuits, the first and last lamp in each of which should be within view of the regulator of the apparatus, seems well adapted to secure this aim. Then, as to cost, Mr. Bennet and Mr. Chadwick have each spoken of the possible saving of one-twelfth of the quantity of gas now consumed. This, however, is supposing that, on the existing arrangement, it takes an hour from the moment of lighting the first to that of lighting the last lamp every evening, and the same time for extinguishing them in the morning. The gas companies can best tell how much time is thus occupied. Supposing the last lamp to be lighted, and the first to be extinguished, at the true moment, as regards the requirements of street illumination, half the time occupied both in lighting and in putting out multiplied by the number of lamps will give the saving of gas to be effected by the successful adoption of Mr. Lane Fox's method. Even if we take the time in each case at only thirty minutes, and thus obtain a mean saving of one twenty-fourth instead of one-twelfth of the gas consumed, we have a very considerable economy. We have just seen that the price per lamp paid by the City to the Gas Light and Coke Company is, on an average, 4*l.* 15s. 6d. per lamp per annum. Of this sum, gas, allowing 5 cubic feet per hour, for an average of twelve hours per diem throughout the year, at the price of 3s. 3d. per 1,000 cubic feet, would come to 3*l.* 11s., leaving 1*l.* 4s. 6d. as the cost of maintaining, lighting, cleaning, and extinguishing. Mr. Chadwick has stated 14s. per lamp as the cost of lighting, which gives a considerable margin as compared with the former figures. If we take our above rough estimate, we find that the cost of gas alone, exclusive of manufacture, is 74 per cent. of the total annual charge. At that rate the cost of the gas burned annually in the street-lamps of London is about 185,700*l.* A saving of one-twelfth would thus amount to 15,500*l.* per annum, and that of one twenty-fourth, of course, to half that sum. On the other hand we have the balance of 26 per cent., now paid for manipulation; by far the larger part of which would be saved by an automatic process of lighting and extinguishing. In the accounts of the companies, however, we find only the sum of 41,750*l.* entered as the cost of lighting and repairing public lamps, which is about 16 per cent. of the charge to the public. If such be the case, there is a profit of 25,000*l.* per annum, over the price of gas at 3s. 3d. per 1,000, on their contracts. If three-fourths of the actual cost of lighting and repairs be saved, which seems a not unfair estimate, we have a possible economy, in this particular, of 30,000*l.* per annum. There then remains the doubtful sum of 25,000*l.* above indicated. Thus, allowing 2s. 6d. per lamp per annum for interest and depreciation on the apparatus which will have to be added to the existing lamps, we shall still find that a total saving of some 50,000*l.* a year to the ratepayers of the Metropolis might be effected by the introduction of a reliable mode of automatic lighting. One objection to the system as at present proposed if we may judge from what is being done in Pall-mall, is the disfigurement of the streets by the apparatus affixed to each lamp, and more wires.

Another point which is brought forward in Mr. Haywood's report bears upon the utility of the invention in question. The Commissioners of Sewers have been anxious to provide the means of lighting London during fogs: a matter of no small importance to public safety. The gas companies having been communicated with on the subject, replied that there would be great difficulty in providing the staff necessary for the sudden contingency, the lamp-lighters being, during the day, scattered all over London, engaged in other vocations; and therefore that it would not be possible to rally them, occasionally only, in time to be of use to the public. This is, no doubt, a fair view of the case, and it is one of serious disadvantage to the whole of the metropolis. But the introduction of an automatic mode of lighting would at once dispel this difficulty. The only question that would then remain open in case of fog would be the ability of the gas companies to provide for the continuous consumption of an extra number of hours. They are at this moment subject to the immense draught made upon their resources by the use of private lamps during fog, which is much more considerable than any that could be made for street-lighting. The total gas sales of the six companies united amounted to more than 2,900,000*l.* in the year, which is considerably more than tenfold the sum received under public contracts. This difficulty, therefore, is reduced to the minor inconvenience of requiring the gas companies to provide a sufficient supply of reserve gas to be used in time of fog, a matter well within the limits of the rightful requirements of their customers. In case of any unusually prolonged fog, some check should be put by patriotic feeling, and, if necessary, by other means, on unusual private consumption, so as to ensure, at all events, the due lighting of the street-lamps. We commend the study of the question to the consideration of the Commissioners of Sewers and of their able and provident surveyor and engineer.

In the matter of water supply, the amount paid by the Commission during the year was 1,563*l.*, including supply to urinals, flushing sewers, street-watering, washing courts and alleys, drinking-fountains, and stand-pipes. The courts and alleys inhabited by the poorer classes were, between the 2nd of July and the 27th of October, washed twice a week with jet and hose, and sprinkled with a solution of carbolic acid, in addition to the daily sweeping. Every court, thoroughfare, and alley in the City is swept once daily; and in wet weather the main lines of thoroughfares are swept a second time during the day. The street-orderly system is, in addition, applied to all the main thoroughfares; and 120 orderlies are employed. Thus an almost continuous street cleansing is carried on throughout the City. The footways are swept once daily, at least so the report says, and in wet weather those in the main streets are cleansed repeatedly during the day. The Commissioners think fit to remind the inhabitants that they are not relieved by their

legal obligation to cleanse the footways in front of their premises. But it is clear that the work is best performed by a central authority, as is actually the case.

For other items of the provision made by the Commissioners of Sewers for the health and comfort of the inhabitants and visitors of the City, we must refer to Mr. Haywood's report, which is lucid and unpretending.

There has been, however, within the past few days, a new scheme brought forward bearing upon the great difficulty of the choking of the City thoroughfares, as to which we hope that the public will have the advantage of an early report from the City Surveyor. We refer to the proposed single-span high-level bridge across the Thames, concerning which we gave some particulars in our last number. We are disposed to look with favour on the plan, if the data, when thoroughly sifted, prove such as to support its applicability. We have repeatedly called attention to the serious engineering danger of throwing any additional weight on the existing foundations of London Bridge. It is no disrespect to the memory of Sir John Rennie to say so. We are convinced that, were he alive, he would be the very first to assure the authorities of the City that it would be very perilous to throw more weight on a structure of which a portion has been once on the move. The line of the bridge was adopted in spite of the advice and protest of Rennie. The foundations were rendered less absolutely reliable than might have been wished, in consequence of the vicinity of the deep hollows excavated in the bed of the Thames by the current through the old bridge. The Southwark abutment was actually on the move, and, when the subsidence ceased, remained 14 in. out of level. It will be temerity without excuse to risk the recommencement of the movement; and no engineer who values his reputation will take upon him to say how small an additional weight might do this.

More, there is the fact in evidence that there are fewer stoppages on the bridge than occur in an equal distance on any thoroughfare with at all a similar traffic. We entertain no doubt that a widening of the bridge would be of little or no advantage whatever, without a corresponding widening of the approaches, a matter of which the cost is quite prohibitory. For these, amongst other reasons, we have more than once intimated the opinion that the attention of engineers ought to be directed to the crossing of the river below London Bridge.

Architecturally considered, a bridge of a single span over the Thames might be made a great ornament to London, and a work of which not only the designer, but the country, might well be proud. The abnormally low price of iron, and the great improvements lately introduced in the manufacture of steel, are such as to make the present time unusually suitable for that structural novelty, a great steel bridge.

Thus far we are disposed to go with Sir Joseph Bazalgette. There is, however, another order of considerations, as to which we do not say that we oppose his views, but we do say that a very full investigation is necessary. This is, of course, the question of how far the river-side traffic, or the traffic which has to cross the river, would be likely to avail itself of a crossing at so considerable an elevation above the surface of the soil. The report speaks of inclinations of one in fifty and one in sixty on the north side. That, no doubt, is a moderate and practicable incline; but the question of the actual height to be surmounted has an importance independent of the question of inclination, or of the rapidity with which that extra work has to be done. To reach any portion of the 40 ft. general contour line, to which a descent of 31 ft. would bring the level of the approach, we must go more than half a mile from the river; and to reach that portion of the north road which occupies such a general level more than a mile has to be traversed. Between the Cheapside, Lombard-street, and Whitechapel, main line of road and the river, the level of the ground is very low. On the south bank, again, the 40-ft. contour line runs to the south of the Old Kent-road; and a large area, extending to two miles and a quarter from the river, falls within the 10-ft. contour line.

We might be able to speak with more certitude if the plans and sections which accompany the report of Sir Joseph Bazalgette had the vertical dimensions written. It is impossible to ascertain these with any accuracy merely by scale. It appears, however, that some 10 ft. are to be gained by a double incline over the bridge, meeting in a point at the centre. This would, however, only give a nominal headway, and would be a disadvantageous arrangement, in point of fact. A level platform is a great desideratum for a bridge; and although 3 ft. or 4 ft. might perhaps be gained at the ends of the platform, the advantage of a single span would not be fully gained if the soffit rose from both abutments to the centre. The proposed arrangement seems to us only to increase the height to which the loads must be raised, without securing any material advantage to the shipping.

The new feature of a spiral approach (which is indicated in an impossible way by two concentric circles on the plan) is said to have a rise of 1 in 40 for a length of 714 yards.

The resistance of gravity, on that gradient, is equal to 56 lb. per ton. The ordinary resistance to a wagon, on a good road, is stated, according to Sir John MacNeil's experiments, at 44 lb. per ton. Thus 127 per cent. would be added to the work of the horses the moment they began to ascend the spiral road. That extra work may be within the power of ordinary cattle for a spurt; but it may be questioned how far they would be likely to keep it up for a dead pull over 700 yards. The question would not be one of pure mechanics. We should have to consider the power of the horses, the ordinary amount of the loads they draw, and the amount of spare power to be obtained from them for a given time or distance. In addition to this we should have to study the opinion of the drivers and horse-owners. It is very questionable how far this would prove to be in favour of the spiral approach—especially when we bear in mind the extreme aversion of the working classes of the country to novelties, however ingenious. It would, therefore, require some inducement more obvious than that of a saving of 1,000 or 1,100 yards, we fear, to divert traffic to the new line.

We must not be understood as wishing now to express a definite opinion on the subject. But we think it is evident that it requires to be more thoroughly thrashed out than has yet been done before it will be advisable to decide on the expenditure of more than a million of money by way of such an experiment. It is possible to compare, with considerable accuracy, the amount of mechanical power that is demanded for testing a given weight over either route. This we observe has not been done. But even more important than the actual outcome, in foot-tons, of such a comparative calculation, is the correct appreciation of the mode in which the work can most conveniently be done by animal power. The two questions are not necessarily identical. It is possible that the usual proportions of load to horse power, the rough and ready mode of attaching harness, or other considerations, would be such as to prevent an experienced driver or horse master from making use of a route which was not only the nearest, but the one demanding the least exertion of power. It might be the case, for example, that an addition of 50 or 60 per cent. to the usual load would be as much as the horses of any particular vehicle were capable of dealing with. If so, they would not take a spiral ascent of 1 in 40, however much would be the saving in distance, or even in total mechanical work effected, if they could take that route. There is obviously much yet to be considered before the proposal in its present form can be accepted.

Of the three rough designs proposed, that of a single span of 850 ft., of which the idea seems to have been suggested by the high-level bridge at Newcastle-on-Tyne, is the one which affords more scope for a truly architectural treatment. Of such treatment, however, there is no indication in the design itself. We have many instances in the country of the happy combination of structural strength and architectural beauty. On the other hand we have noted examples, not fifty miles from the Tower, of the attainment of the first by the baldest and commonest design, without the slightest attempt at the second. There is a want of architectural *coup d'œil* in the design as it at present stands, which a man of genius would know how to remedy. The engineer should always consult the architect in a work of this nature and magnitude.

Halifax Flour Society Competition.—Competitors are inquiring what has become of the drawings. Perhaps the secretary will tell us.

THE FRENCH AND FLEMISH GALLERY.

THE twenty-sixth Annual Spring Exhibition in Mr. Wallis's well-known gallery is not remarkable for any works of the highest quality of genius, but there are some of special excellence, and not of the less interest that some of them are by artists of comparatively new and rising repute. Among these is F. A. Kaulbach, the bearer of a name brilliant in the annals of German art, and which its present possessor bids fair to keep in honourable repute. When first we saw this artist's works on the walls of the gallery, and were naturally attracted to them by the familiar name, they struck us as weak and colourless, and pervaded by a rather affected sentimentality. Subsequently there was an improvement; the subjects were less ambitious and less sentimental; but in the painter's two works this year, "A German Lady of the Eighteenth Century" (40) and "Summer Roses" (177), there is a long stride in advance of anything he has exhibited before, and he seems to have all at once found the secret of rich colour and a fine broad masculine style. The two subjects named are both painted from the same model,—a blonde woman, with a very fine and interesting countenance; the first is a bust only, the head attired in a voluminous and rich head-dress, consisting of a wide-brimmed hat, beneath which the hair behind is gathered up into a great bunch, and done up with gold braiding. The painting of the face is very successful, remarkably soft and flesh-like in texture. In the second-named work the face is not quite so good, but the pictorial effect and treatment of the costume is beautiful, sufficiently realistic yet entirely free from "paintiness." Herr Kaulbach is still a young man, and after the proof of his capability of advance which these studies afford, we shall look with interest for his future works. It is pleasant in itself to meet a new and distinct variety of studies of female heads in the gallery; we have pretty well run the round of Bouguereau and Schlesinger and Goupil, and know most of what the two former at least can give us, who are represented here in their usual form; Goupil, indeed, is more exceptional, and his study, called "L'Attente" (28), though its excellence is almost purely material, is fine, and different from much of the artist's previous work.

The four cardinal points of the room are occupied respectively by Van Marcke's "Source of the River Neslette" (21), Meissonier's "The Savant" (74), Billet's "Faggot-gatherers" (124), and De Neuville's "Struggle at the Styring Railway Station" (167), an incident of the Franco-Prussian war. This last will certainly attract most attention of the four, although it is perhaps the least meritorious, and certainly the least refined as a work of art; but it has that brilliant dash and reality which French painters of battle-scenes are able, beyond all others, to impart to such a scene, and the incident is such as to be very telling in a picture. The Germans had seized the railway buildings, and the French soldiers on the railway in the foreground are making the most of the cover afforded by some of the rolling stock; some crouch behind a wagon, or lean round the end to steady their guns over the buffers while firing; a large covered van and a train of trucks are being drawn forward from the rear under the orders of the officers, to afford more effectual cover; men are falling in every direction: it is hot work. The buildings and the effect of the smoke from the musketry are admirably real; the painting of the figures spirited, but a little coarse and hasty; and the reds of the uniforms rather crude; in short, De Neuville does not by any means equal his brother artists Detaille and Phillipoteaux in artistic treatment of such scenes; he gives all the "go" of the action, but without pleasing our æsthetic sense. Billet's large work has some of his finest characteristics; his group of peasant girls standing or reclining in the foreground may be said to represent classic attitudes and *pose* in rustic dress and character; though their personality is quite in keeping with the subject, the figures are in their way noble-looking young women, and their apparently unstudied attitudes very fine and expressive. Meissonier is not altogether himself in his production, a work on a larger scale than is usual with him, and a little melo-dramatic in character; perhaps it may improve on acquaintance, and of course its want of success is only comparative; but as "a Meissonier" it is not up to the mark altogether. Van Marcke's painting, the least interesting in sub-

ject of the four, is the most entirely successful; it is a splendid study of cattle under the shade of a great tree, which fills up most of the canvas; to the left is a bit of distance that might have been painted by Constable, whose claim to be regarded as the direct progenitor of modern French landscape-painting could hardly have stronger corroborative evidence than parts of this work afford; the cattle, however, are such as were quite beyond Constable's powers in that line.

Among the other works which we are obliged to glance at in a more miscellaneous manner those of Kauffman (another rising artist) are among the best; his "Special Correspondent" (78), a flunkey playing the great man amid a collection of boors in a tap-room, is admirable in its way, though it is almost painful to contemplate the studied painting of utter vulgarity and utter stupidity in contrast; one wants some relieving character or incident of less disagreeable stamp. His "Daybreak after the Fair" (71) is more pathetic and less repelling, and perhaps equally clever: he is at least a painter who does not do things by halves. There is one Israels, which, like the Meissonier, would be thought more of under another name; it is not equal to the painter's fame. Among the realistic pictures of which certain recent French painters have set the fashion, Berand's "Sunday at St. Philippe-du-Roule, Paris" (58), succeeds thoroughly in its aim, not a very high one; the portrayal of the outsides of a conventional fashionable congregation. C. Seiler sends two palpable attempts to rival Meissonier, "Halberdier" and "Standard-bearer" (68, 81), by no means altogether unsuccessful even from that point of view. C. Haag and Seignac, again, in their child pictures, seem too much like repetitions of E. Frère; but the latter is a gifted artist, and runs his model very hard, to say the least. Among the landscapes is a fine little work by the late N. Diaz, others by Daubigny, Windmaier, and other well-known names; one or two of those marvellous winter scenes, by Munthe, which are very like each other certainly, but each new specimen of which leaves us with the impression that this is positively the very best one the artist ever painted. No. 33 in this collection is extraordinary; it is impossible that realism in landscape could go further; we could walk into it, we feel the cold as we look at it. Some landscapes by Heffner, whose name is not so familiar, should be noticed, especially "A Study from Nature" (34). Among things that do not please us are the two works of Madrazo, whose brilliant gifts, with a strong dash of vulgarity, we noted the first time his work appeared in this gallery; unluckily the brilliancy is much less evident, the vulgarity much more so, in his recent works, and his colour is an absolute annoyance. We can put up even with these, however, better than with the religious charlatanism of Gabriel Max, whose "Sancta Julia" (85) finds a place here. Time was when such clap-trap would not have been admitted into this exhibition, and we can only hope the proprietors will keep their walls clear of it for the future.

ETCHINGS BY MR. SEYMOUR HADEN.

During the latter part of last week Messrs. Hogarth, the printsellers of Mount-street, had on view a small collection of the etchings of Mr. Seymour Haden, including more especially a series of twelve new etchings partly executed during the past year. The private exhibition of these, the latest proofs of Mr. Haden's genius as an etcher, offers a suitable opportunity for us to say a word in recognition of a most remarkable amateur artist. Considered as an etcher, there is, in fact, nothing whatever of the amateur about Mr. Haden, in one sense of the word at least; his works may bear comparison with those of any landscape artist who has made etching a specialty; his amateurness, if we may so put it, consists in the rather extraordinary fact that this beautiful work is only the recreation of a busy professional life, and that he is able to keep up a large medical practice and yet to produce etchings in such abundance and of such rare excellence. The explanation may partly be found in the fact that etching, though emphatically an artist's art rather than an amateur's, is not a form of art involving very lengthy processes of production and elaboration; that success in it depends upon innate genius rather than labour; and this innate genius Mr. Haden possesses in a remarkable degree.

The twelve etchings specially mentioned consist of small plates containing subjects from Nature (*i.e.*, if we understand rightly, etched on the spot), selected with a true appreciation of their suitability for this particular form of artistic treatment. For there are subjects that are to be etched, and there are subjects that are not to be etched, or at least not without a difficulty and labour out of proportion to the result. The peculiar value of etching is that it enables the artist to seize and fix permanently, with great freedom of execution, transient effects and expressions in nature, and to reproduce these in considerable numbers; though by no means with the ease, rapidity, or certainty of engraving, for taking off the impressions with success is a very delicate piece of work; the result is much affected by the individuality of the worker (a fact which of course increases the separate value of each impression), and in general only a proportion of the impressions are quite successful or satisfying. Still, there remains the fact of the multiplication of the results; and that etching is the only process in which a free and direct transcript of effect in a sketch form can be reproduced or multiplied by a process not wholly mechanical, and with a beauty and subtlety of tone and atmosphere which hardly any other kind of engraving can equal.

What is to be desired in a typical subject for etching (a landscape subject at least, with which alone we are here concerned) is that it should present strongly-marked and predominant feeling or *motif* which can be realised fully apart from any elaboration of detail. As far as landscape is concerned, etching is, in fact, rather metaphysical than physical in its objects; its aim is to give the essential feeling and poetry of the scene: this, at least, is what it can accomplish with greater force and success, in proportion to the means employed, than any other form of art: it is an interpretation rather than a reproduction of nature. Looking at the matter in this light, we should select for special admiration, among the twelve new etchings, not the rather highly finished and elaborated scene, "On the Test," beautiful as it is, but some of the apparently much slighter productions which show such a thorough knowledge of the special resources of etching, such a complete certainty as to the meaning and effect of every touch, and such a concentrated feeling. Among these we were especially struck with "The Moat-houses" and "Windmill Hill" (Nos. 9 and 10 of the set); the latter is a sketch of a most simple subject—a dip of slightly undulating common land with only just enough incident in it to make a foreground and define the distance, yet with a vague imaginative charm about it which it is not easy to define, but which draws one back to it again and again. It is more easy to define the interest attaching to the powerful little study called "Grim Spain," a sketch of black gloomy buildings, and a waste landscape, in the outskirts (apparently) of Burgos; and that of "Purfleet," a harbour view in which the picturesque force of the foreground with its medley of objects serves to emphasise more the calm and light of the expanse of water, the surface of which is merely defined by a line or two, and by the point of contact of the ships which float upon it. The freedom and effect with which the sky and clouds are indicated, purely by etched lines, and very few of them, is remarkable. This plate is a good example also of one of the qualities in a scene which renders it specially suitable for etching, the existence of an abundance of light, which leaves to the etcher only the task of duly emphasising the points of shadow to bring at once a flood of brilliant light over the scene: the manipulative problem being the very reverse of that which characterises engraving, in which the "hard work" is all in the lights.

Other works by Mr. Haden were on view along with those we have been mentioning, most of them more or less known to those who keep an eye on artistic work, and exhibiting various types and degrees of finish; we may particularly allude to one which was published by the Etching Club, and of which only a few impressions, we believe, are to be had; a study of trees in Kensington Gardens, the delicacy and beauty of which it would be almost impossible to exaggerate. Of the recent etchings we have been mentioning, some will no doubt be seen in Gallery IX. of the approaching Royal Academy Exhibition.

Municipal Courtesies. — On Wednesday evening the Lord Mayor entertained the members of the Metropolitan Board of Works.

ON THE ORIGIN AND PROGRESS OF WOOD ENGRAVING.*

Wood-engraving, from its very beginning, was essentially a popular art. It was created to supply the many, not the chosen few. It has thus done more for the world in these latter ages, and conferred more pleasure than, perhaps, any other. Who does not remember his first picture-alphabet, in which he was taught to associate letters with things, by means of coloured wood-cuts? Or his first book of animals? Or, perhaps, if the memory goes further back, our recollections linger over certain quaint story-books, as quaintly illustrated, a Watts's Hymns, a Bewick's Fables, or, mayhap, an old Bible, the woodcuts of which are even more vividly remembered than the text. Nor is the art a whit less popular in this stirring nineteenth century of ours, so prolific of new ideas and new inventions, than it was 400 years ago. On the contrary, the greatly extended study of art in all its forms, and the spread of education, has so increased the love for illustrated works, that the art of the wood-engraver is now more necessary to us than ever. Every blank wall is made picturesque by his productions, to which colour-printing has added a new charm. Our admirable illustrated newspapers could not exist without the wood-engraver, our *Punch* would be insipid, and even the "Penny Horrible" would lose all its attractions for the gaping crowd if deprived of its ghastly wood-cuts. A short account, then, of this truly popular art, its origin and progress, may be acceptable to many, especially if it enable them to appreciate better the magnificent collection, of which a catalogue is subjoined.

First, then, what is a wood-cut? It is an engraving, printed from a wood block, in which all the parts intended to be white in the impression, and, therefore, not drawn on the block, are cut away, or dug out, while all the portions to be dark in the print, and which are drawn on the block, are left intact, uncut, and therefore *standing up in relief*. When such a surface is inked, the cut-away portions are untouched, and are left white in the resulting impression. Now, engravings from copper and steel plates are obtained by a process which is the reverse of this. All the parts that are to be left white in the resulting print are left untouched in the plate, while all the portions that are to print black are engraved, cut out, or else corroded away by acids. Such a plate is first inked, and then wiped clean; it is only the ink left behind in the engraved or lowered portions which, when pressed against the paper, gives the impression.

The modern wood-engraver uses, for all fine work, blocks of the hardest box-wood, cut across the grain. These are necessarily of small size, and, for large engravings, he is obliged to join several blocks together. The early wood-engravers used pear-tree and other woods cut like planks in the direction of the grain, which gave them much larger pieces, but altogether excluded delicate engraving.

A block thus prepared can be inked and printed from just like type. It can be inserted into a mass of type, set up to make a page of a book, and printed from at the same time, so that the text and the illustrations are produced at the same moment, and completed together. It is this which constitutes the peculiar advantage of wood-engraving. The copper, and the steel plate, since they require a totally different mode of inking, must have their engravings printed off on separate leaves from the text, or at a different time. But the peculiar charm and value of illustrations are best obtained when they are inserted into the text, and, for this purpose, there is nothing like wood-engravings.

Upon the origin of this art a great deal has been written, which may be found in the works of Papillon, Heineken, Jackson and Chatto, Weigel and Zestermann, and A. F. Didot, but all that is certainly known may be told in very few words. Carving in wood, and, consequently, the use of wooden stamps, must have been practised and used before the dawn of history. We know that the ancient Egyptians and Assyrians employed such stamps to impress their primitive characters upon soft clay, and specimens of them actually exist in our museums. The Romans also used them; though, to brand their slaves, they were obliged to employ brass ones. No further advance was

* The Liverpool Art Club have arranged a loan exhibition of wood-engravings (a fine collection), and preface the catalogue with the following memoir, which deserves circulation.

made until the twelfth and thirteenth centuries, when engraved blocks began to be used for giving off impressions in colour on to the smooth surfaces of silk and other fabrics. Weigel gives no less than ten illustrations of printing from wooden blocks on coverlets and garment fabrics before and during the fifteenth century. Such imprints increased considerably during the thirteenth and fourteenth centuries, when liturgical vestments and choice draperies were often thus elaborately adorned. Linen, silk, satin, and even leather received such impressions in various colours, sometimes in gold. Here was the germ, certainly, yet it grew not into the art. Down to the end of the fourteenth century no mention has been found of wood-engravings. Boccaccio and Petrarch, and our own Chaucer, are silent about them. Even Richard de Bury, Bishop of Durham, in the reign of Edward III., in his curious Essay on the Love of Books, says not a syllable about any other illustrations but those painted by hand. There is not a single wood-engraving existing which there is any reason to attribute to an earlier date than the beginning of the fifteenth century.*

At length we tread on firm ground. Some eighty years ago Heineken, a most indefatigable hunter after book rarities, discovered in an ancient Convent at Buxheim, near Augsburg, a large coloured wood-engraving of St. Christopher, with the date, 1423, distinctly cut underneath. It was pasted inside the right-hand cover of a manuscript book, finished in 1417. Another large engraving (the Annunciation) was pasted inside the left-hand cover, and both were coloured by stencilling. This volume is now in the magnificent collection of Earl Spencer. Many other single wood-cuts have been discovered, which may be somewhat earlier than these, but the St. Christopher still remains the earliest wood-cut, about the date of which there is no dispute. In this famous cut, the gigantic saint, who was 12 ft. high, is represented as performing his usual penance, that of carrying pilgrims across a stream where there was no bridge. Amongst others he carries over the child Christ, and for the first time finds that, in spite of his great strength, he is unable to carry him any further. To prove to St. Christopher who he is, the child tells the tottering saint to plant his staff in the ground, and it grew at once into a palm tree, bearing fruit. This miracle converted thousands. Such is the legend embodied in the picture, beneath which are two lines of wood-cut text:—

> "Cristofori faciem die quacunque tueris
> Illa nempe die morte mala non morieris,"

which may be thus translated:—

> "Each day that thou the likeness of Christopher shalt see
> That day no evil death shall make an end of thee."

This alludes to a popular belief, common at that period to all Catholic countries, that the day on which any one regarded a figure or image of St. Christopher, he would not meet with a violent death, nor die without confession. To this popular superstition, Erasmus alludes in his "Praise of Folly"; and, thus believing, the Squire, in Chaucer's "Canterbury Tales," wore

> "A Cristofre on his brest, of silver shene."

Another of these earliest wood-cuts represents St. Bridget, in pilgrim's garb, writing an account of her visions, and at the top is an inscription:—

> "O Brigita, bit Got fur uns!"—"O Bridget, pray to God for us!"

Such, then, were the earliest productions of the art; and we may fairly conclude that wood-engraving, like printing, was discovered at that time, because it was greatly needed. It was a natural outcome of the spirit of the time. A great revival in religion and learning was setting in, and the spirit of the coming reformation already stirred the great heart of Germany. Something more was expected from the Church than it had hitherto afforded to the common people; and the religious instinct was satisfied for the time by the distribution of these large coloured wood-cuts as aids to devotion. The preaching friars found them of service, and many a dull sermon was lightened by a picture and a legend. They were, at least, better than the old mountebank tricks of the friar, whose sermon is reported by Boccaccio, and who exhibited to his gaping audience a feather from the wing of the archangel Gabriel, and a box filled with the coals over which St. Laurence was grilled! It became the custom to distribute figures of the patron saint, at churches and shrines, to those who visited them; and many a pilgrim, possessed of his picture—to which he attached a magical efficacy—returned on his way rejoicing.

The next step in the progress of wood engraving was to print a connected series of large woodcuts, having at top or bottom of each an explanation of the subject of the picture, and to bind them together as a book. Several of these block books still exist; of which the best known are:—1. Apocalypsis; or, Scenes from the Life of St. John and from the Revelations; 2. A History of the Virgin Mary, as it is supposed to be typified in the Song of Solomon; 3. The so-called Biblia Pauperum, which consists of Typical Figures of the Old Testament, followed by their Antitypes in the New; or, the History of Jesus Christ pictorially represented. This, the most popular of the block books, was rather a Biblia Pauperum Predicatorum; or, Poor Preacher's Bible—a series of woodcuts to warm the preacher's imagination, and provided with texts to assist his memory. In an age when copies of the Bible were mainly confined to the libraries of the great monasteries—when reading and writing were things unknown to the mass of the people—and when many a priest could scarcely spell his breviary,—these block books, foolish and childish as we may think them, must have been of great service, and have helped not a little to diffuse some knowledge of the Scriptures amongst the people. At least, we know that they were highly popular, for five editions of the Poor Preacher's Bible alone are known. The cuts in all these early works are executed in the simplest outline manner; there is not the least attempt at shading, by means of inner lines—cross or parallel—to be perceived in any of them; and the most difficult part of the engraver's task must have been the cutting of the letters. All the earliest woodcuts, probably until the invention of printing, were taken off by laying paper on the inked wood block, and rubbing the back of it gently, as wood engravers do to this day in taking off their trial proofs. Each leaf was printed on one side only, and, to make a number of them into a block book, the backs of the leaves were often pasted together.

But all these advances were soon to be cast in the shade by the discovery of the art of printing. The illustrious Gutenberg, one of the greatest benefactors of the human race, was engaged for many years in labouring to perfect the divine art of printing. During that time he expended all his own fortune, and as much money as he could borrow, over his costly experiments. Like other great inventors, however, he reaped neither profit nor glory from his great discovery; for, just as he had finished the first printed book, and the first printed Bible, a magnificent proof of the perfection to which he had brought the new art, the entire impression, with all the type, presses, and other materials, were seized by Fust, a goldsmith, who had lent him money, and in Fust's name, as printer, all the earliest printed books were issued. Gutenberg died blind and comparatively neglected in 1467. And yet this man had built up the art of printing from the lowest beginnings to a very high standard of excellence. He commenced by taking a hint from the wood engravings which so suddenly sprang into demand, and had letters cut in wood, with holes through them, by which they could be strung on wires. These were, no doubt, soon thrown aside for types made of some lead alloy, cast in brass matrixes, as appears from the records of a trial he had in 1439, from which we also learn that he had invented a press, and that this was one of the secrets of the "wonderful art" to which Gutenberg already laid claim.

By the invention of printing a wonderful stimulus was given to wood engraving, and the two inventions progressed hand in hand together, in a union that bids fair never to be disunited. Thenceforth the block books were usually multiplied at the printing-press, and, in the last of the series, the "Speculum Humanæ Salvationis," which first appeared about 1460, the wood-cuts are taken off by friction as before, the back of the leaf being left blank, but there is an accompanying text printed at a press from movable type. And now, by the rapid diffusion of printing, the two arts spread over Europe. In 1461 appeared the first printed books of Fables, illustrated with rare woodcuts, and within twenty years from that time quite a series of illustrated Bibles had been produced. The two inventions had, indeed, exactly met the wants of the age. For a thousand years the world had been supplied with books solely by the monkish scribes, but the demand, even at the end of the fourteenth century, had outgrown the supply. Already guilds of writers and illuminators had been established at Bruges, Paris, and elsewhere, whose sole trade was the multiplication of books, and many works of poetry and romance were perpetuated by them which would scarcely have agreed with the air of a monastery. All these MSS., both secular and religious, owed much of their attractions to the work of the illuminator, who, after the volume was written, added pictures, capital letters, and borders, elaborately painted in colours and gold. The sumptuous beauty of many of these works may be judged of from the specimens exhibited.

Was it likely, then, that the book-buyers of an age in which even religion was nothing if not picturesque would be content with the dull regularity of a printed book? It would have left on their minds an aching void, which print could never fill. But the art of the wood-engraver supplied the want. He furnished capital letters of elaborate design, often enclosing pictures, which were sometimes printed in colours, as blue and red; also borders, to set off each page. No doubt these were occasionally cut in brass, from which casts in type-metal could be made. But the majority were from wood blocks, as were also the numerous pictures with which so many early-printed books were embellished, and which are increasing in value every year from the light they throw on the costumes, manners, and customs of their time.

In spite of the vast stimulus given to wood-engraving by the invention of printing, there was no improvement, to the close of the fifteenth century, in the technic of the art or in the designs engraved, and the best of the cuts of that period are decidedly inferior to the best of those in the early block books, or even the still earlier ones, such as Earl Spencer's. One only exception can be made, viz., the beautiful title-page to the Latin edition of "Breydenbach's Travels," printed at Mentz in 1486, which, both in design and execution, is the finest woodcut that had been produced to that date, and renders this, the first printed book of travels, doubly interesting.

But now appeared the greatest artist who ever drew on a wood-block, the all-accomplished Albert Dürer. He was born in 1471, in the glorious old city of Nuremberg, then the greatest manufacturing town in Europe, the Birmingham of the Middle Ages, but, unlike Birmingham, the highest qualities of art were displayed in its metal work. Adam Kraft, the famous sculptor of the "Sacraments Hauslein," in the Church of St. Laurence, was a townsman and neighbour; as was also Peter Vischer, the bronze-worker, who made the shrine of St. Sebald—works which, for richness of design and delicacy of execution, are scarcely equalled by the finest monuments of Italy.

> "In the valley of the Pegnitz, where, across broad meadow lands,
> Rise the blue Franconian mountains, Nuremberg the ancient stands;
> There, when Art was still Religion, with a simple, reverent heart,
> Lived and laboured Albrecht Dürer, the Evangelist of Art."

His father was an able goldsmith, and Albert was his favourite child. "My father," he says, "took special delight in me. Seeing that I was industrious in working and learning, he put me to school, and, when I had learned to read and write, he took me home from school, and taught me the goldsmith's trade." But Albert longed to be a painter, and at length he was apprenticed to Michael Wohlgemuth, the principal painter of Nuremberg. Wohlgemuth's establishment was probably the largest picture manufactory of the time. With the help of his numerous assistants, he supplied, at a moderate price, oil paintings, of which the usual subjects were scenes from the life of Christ and of the Virgin Mary, or martyrdoms of saints, commissioned by mercantile corporations or private persons to decorate their chapels in the churches. He also executed a vast number of designs for the wood-engravers, especially for the numerous volumes continually issuing from the presses of Antony Koberger, the most enterprising printer, not only of Nuremberg, but of Europe, and Dürer's godfather. In Wohlgemuth's workshops, therefore, Dürer had plenty of practice in drawing

* Playing cards are said to have been introduced into Europe by the Saracens towards the close of the fourteenth century, and some have endeavoured to trace to them the first impressions from a wood-block on paper or vellum. But it is now known that the earliest cards existing are all hand-painted or stencilled.

for wood-engraving, and thus obtained that inclination for the work which has been as fortunate for the world as for his own fame. His paintings, which might have given him a name equal to the greatest of the Italian school, have nearly all perished; the numerous drawings which he executed are shut up in Imperial museums, or in the cabinets of a few wealthy collectors; but his engravings and woodcuts exist yet by thousands, and have carried his fame to all the world.

After the usual travels (*wanderjahre*) of a German youth, he returned to Nuremberg at his father's bidding, in 1494, to be married, and settled down at once to hard work. In 1498 appeared his earliest wood-cuts, the sixteen great designs for the Apocalypse; and it will be most instructive for the reader to contrast the similar designs of his master, Wohlgemuth, as seen in the *Nuremberg Chronicle* and "Der Schatzbehalter," with those of his inspired pupil.

The Northern mind had long dwelt with eagerness on these mysteries of things to come, and among the earliest block books produced in Germany is an edition of the Apocalypse, with rude figures. But Dürer not only transcends all efforts made before him in the representation of these strange promises, terrors, and transformations, these thaumaturgic visions of doom and redemption; the passionate energy and undismayed simplicity of his imagination enable him, in this order of creations, to touch the highest point of human achievement. The four angels keeping back the winds that they blow not; the four riders; the loosing of the angels of the Euphrates to slay the third part of men; these and others are conceptions of such force, such grave or tempestuous grandeur in the midst of grotesqueness, as the art of no other age or hand has produced. From this time till his death, in 1528, he continued to pour forth, with a creative energy that never seemed to flag or to repeat itself, an incredible series of designs, of which nearly two hundred have been fortunately preserved to the world in the popular form of wood-engravings. These include, besides the Apocalypse series, the "Life of the Virgin," in twenty large woodcuts, the most generally pleasing and popular of all his productions; the twelve folio cuts known as the "Great Passion"; the series of thirty-seven smaller ones, distinguished by some writers as "The Fall of Man and his Redemption through Christ," but which Dürer himself always called the "Little Passion"; also many single subjects, amongst which are some of his finest designs; and, lastly, the gigantic works which he executed for the Emperor Maximilian. This great monarch, fired with a hundred ambitions at once, was anxious that the best artists of his time should be employed to represent him as a hero of romance, successful alike in the chase, in love, and in war, as a wise king, a patron of all the arts, and a successful general. For this purpose he employed, during several years, Hans Burgmair, Hans Schaufelein, and especially Albert Dürer, in executing vast designs for wood engraving of triumphal arches, cars, and processions, which, doubtless, he expected would transmit his glory and his fame to future generations. We may form some idea of the labour involved in these designs from the "Triumphal Arch," which consists of ninety-two separate wood-engravings, each more than 1 ft. square, all drawn by Dürer, and which form one large composition about 10 ft. 6 in. high by 9 ft. 6 in. wide. The whole subject is a kind of pictorial epitome of the history of the German empire, representing the succession of the German Emperors, and the more remarkable events of Maximilian's reign, with illustrations of his descent, possessions, and alliances. On this task, so unworthy of his genius, Dürer was engaged, more or less, from 1513 until 1520.

It is difficult to avoid lingering over the life and works of one so personally attractive and so marvellously endowed, but for the present we must refrain, and consider him only as connected with wood-engraving. Until his time wood-cuts were little more than mere outlines. With Dürer they at once became finished drawings, in which the light and shade and colour were fully expressed. The numerous engravings and etchings on copper which he executed with his own hand are unrivalled for marvellous delicacy and minuteness of detail, but he adopted an entirely different style in his drawings for the wood-engraver. The material then used was pear-tree wood, cut, like planks, in the direction of the grain. Large pieces could thus be obtained, but delicate wood-cutting on such a substance was quite out of the question. This necessitated a large and bold style of drawing, coarse, indeed, to our eyes, yet very effective. Dürer's works, both on copper and wood, were greatly popular from the first over all Germany and Italy. Raffaelle introduced some of Dürer's figures into his finest paintings, and a famous Italian engraver, Marc Antonio, copied his wood-engravings by wholesale on copper. It was partly to check these piracies of M. Antonio that Dürer made a journey into Italy in 1505.

To the casual observer it may appear strange that nearly all the great works of Dürer and his contemporaries were religious, and yet that they reproduced literally in their pictures the secular life of their own time. Thus, the "Birth of the Virgin," were it not for the splendid apparition of the angel above, swinging a censer, might be taken for the accouchement of a burgomaster's wife at Nuremberg, in the year 1510. But a moment's thought will remove the difficulty. They could not embody in their pictures costumes and modes of living which, in those untravelled times, they had never seen or heard of. Doubtless they followed pretty closely the models and costumes that they saw in the religious plays so popular with the multitude. Again, in an age of despotic governments, with no politics, no literature for the masses, the main strength of art was enlisted on the side of religion. There were many reasons for this. The Roman Catholic Church was then at the pinnacle of power and wealth. Its churches were miracles of art in many forms, glittering and bright as an illuminated missal. If there was any lack of the spiritual element in its worship, the senses at least were gratified in a thousand ways. Religious pilgrimages, processions to shrines, miracle-plays, the exhibition of relics and pictures, and the gorgeous church ceremonies, were all so many schools for art, and studies for pictures; whilst the literature of the Church, its elaborate Lives of the Virgin and the Saints, abounding in strange and picturesque incidents, lent itself naturally to pictorial illustration. Nothing was left for faith, but all was represented by pictures, figures, or living actors, from Adam and Eve to the Mystery of the Trinity. Dürer records frequently, in his diary, the intense delight with which he witnessed, and the care with which he studied, these living pictures. Thus, during a visit to Antwerp in 1521, he witnessed a grand procession "from Our Lady's Church on the Sunday after the Assumption of Our Blessed Lady." All the trades and guilds of Antwerp were represented, each with its appropriate flags and banners. Then followed the religious orders in their characteristic costumes. Next the Canons of the Church, "and twenty persons bore our Lady with the Lord Jesus ornamented in the most costly manner, to the honour of the Lord God. Then followed the Prophets all in order; next, scenes of the New Testament, as the Salutation of the Virgin, the Three Holy Kings on their camels, and other rare wonders, beautifully represented; also Our Lady fleeing into Egypt, very piously set forth. Next followed St. George, very handsome, with his squire; and last, a great dragon, led by St. Margaret and her maidens by a girdle, which was particularly pretty, and the procession was more than two hours passing our house." As we read this, we can understand the sources whence Dürer derived the infinite variety of costume and character which are seen in his compositions, each figure being often stamped with the most intense individuality. All these characteristics are well seen in the splendid series of his woodcuts exhibited on the present occasion, and which would of themselves justify the eloquent panegyric of Professor Sidney Colvin:—"He has every gift in art, except the Greek and the Italian gift of beauty or ideal grace."

Hans Burgkmair, of Augsburg (1473–1531), deserves the next place to his greater rival of Nuremberg, not only for his merits as an artist, but, also, because he is admirably represented in the present collection. That superb procession, the "Triumph of Maximilian," consisting of 135 large wood-cuts, the greater part, if not all, of which were designed by Burgkmair, would, of itself, stamp him as an artist of uncommon richness and fertility of invention. He was engaged on this great undertaking from 1513 to 1519, when the emperor died. The work was at once suspended. The wood blocks were cast aside and forgotten, until they were accidentally discovered, worm-eaten and injured, and some impressions taken from them in 1796. Such is the vanity of human hopes and aspirations! Burgkmair is a very unequal artist; he often displays great power and originality, but he has not the careful handling and refined touch of Dürer. If, however, some of his pieces are bad, others are superlatively fine, especially "Death and the Lovers," which combines his usual picturesqueness and energy with an Italian feeling for beauty and grace, most rare in early German woodcuts. This is also one of the earliest specimens known (it is dated 1510) of the chiaro-scuro, or tinted wood-cut; an attempt to increase the capabilities of wood-engraving, and to imitate more nearly an artist's drawing, by printing in colours, or tints, from several wood blocks. In this one of Burgkmair's three have been employed. Another fine chiaro-scuro by him, the "Emperor Maximilian on Horseback," is printed from two blocks. Burgkmair was also the chief designer employed in the production of "Der Weiss Kunig," the Wise King, another work intended to hand down to future generations the learning, wisdom, and adventures of the Emperor Maximilian, but which remained unpublished until nearly 300 years after his death.

Hans Schauffelien, another great artist, who was apprenticed to Dürer, was the designer of the large wood-cuts in the "Romance of Sir Theurdanck," the only one of Maximilian's artistic publications that he lived to see completed. It was first published in 1517. Schauffelein's powers, however, are better seen in his "Great Passion," a series of wood-cuts published at Nuremberg in 1507, in a book entitled "Speculum Passionis," &c. Many of the designs have a striking resemblance to those of Albert Dürer. The work, however, which best sustains his reputation is "Les Danseurs des Noces," the figures in which are drawn with great spirit and vigour.

Lucas Cranach (1470–1553) is said to have been the first inventor of the chiaro-scuros, and several most valuable specimens of these earliest tinted wood-cuts are in the present collection, with other fine examples of his skill as a designer.

Lucas Van Leyden (1496–1533) is better as an excellent engraver on copper than as a wood-cut designer; but some excellent and rare specimens of this quaint artist are in the present Exhibition.

Hans Sebald Beham (born at Nuremberg, 1500; died, 1550) was a free and bold designer, worthy to be classed in the school of Albert Dürer. He is well represented in the present collection by the curious series representing the influence of the planets over human passions and destinies.

We now come to Hans Holbein (born at Augsburg, 1494; died in London, 1543), the last of this great school of artists, who was not only an admirable painter, but also one of the best designers that ever drew on a wood-block. This great master ranks next to Dürer in artistic ability, natural genius, and fertility of invention. Nay, in some respects he surpassed Dürer, as he had a much higher feeling for beauty of form. It has been most truly said of him that none has equalled Holbein in composing an action with the smallest number of figures, and in the smallest possible space.

This is well seen in the "Bible Pictures"; but especially in the "Dance of Death," a fine selection from which will be found. These tiny pictures deserve a careful study. They are wonderful for their infinite variety, the dramatic energy of the figures, and the sharpness of the satire. It is a pity that the smallness of the scale on which they are drawn detracts somewhat from their effect. Most fortunately these little gems of design have been cut in the wood with a perfection that has never been surpassed. Of the many able copies made by modern engravers, none approach the originals. They have all the spirit of the master. The drawing is very simple, but every line tells.

Many other designs for a "Death Dance" will be found in the present collection. The subject appears to have had a peculiar fascination for all classes in the fifteenth and sixteenth centuries. It appears in the border decorations of the printed Books of Hours (a most un-Christian idea in manuals of devotion), and occurs frequently in other forms. In these strange compositions Death is represented under the most repulsive aspects, as a skeleton, or a half-decayed body, triumphing over all classes, from the Pope and the Emperor down to the beggar, and forcing all to join in the common dance to the grave. A horrible subject! What

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could have been the cause of its general popularity? May we not find it in the commencing reaction against the accumulated miseries of the feudal ages? The vast mass of the people were ground down and oppressed by a hundred forms of tyranny, spiritual as well as temporal, and they saw in death the universal leveller, who recognised no class distinctions, no exclusive privileges, and who, in his own time, would tyrannise over their tyrants, and in some degree avenge their wrongs.

Other remarkable specimens of Holbein's skill are in the present collection. The title-pages he designed are very fine. One,—the title to the "Great Bible" of 1539,—has a special interest for Englishmen. This, the third English Bible, was secretly printed at Paris by some friends to the Reformation, and Holbein's title was designed to secure the favour of Henry VIII., by representing all classes as singing his praises. Part of the impression was seized by the Inquisition and destroyed.

Of the later German artists who made designs for wood-engravings, we may mention Virgil Solis, whose Bible cuts are in the present collection, and Jost Amman, whose graphic representations of costumes and fashions, trades and professions, in his time, are much esteemed.

The art of wood-engraving was early introduced by the Germans into Italy with that of printing; but no native works of any ability are known to have been executed before 1490. From that date until about 1560 the Italian presses produced many beautifully-illustrated works, with designs full of grace and elegance. Fine specimens of these are the "Romance of Poliphile" (1499), the "Epistles of St. Jerome" (1497), and the two Missals. The illustrations in these books are worthy the best period of Italian art.

The second place after Germany must, however, be awarded to France, for the number and excellence of its early wood-cuts. Throughout the fifteenth century Paris was the chief centre for the trade in manuscript books. There dwelt those numerous artists and scribes who wrote and decorated the vast number of beautiful Books of Hours, Psalters, and other devotional works, which made the French school of illuminators so famous, and of which many copies still exist. The Paris publishers early applied the new arts to furnish cheaper substitutes for these expensive volumes. They had the most exquisite models to imitate, and abundance of artists to furnish the requisite designs; and so well did they employ the advantages they possessed that, in a very few years, Paris was the great centre whence Europe was supplied with Prayer-books, which have never been surpassed for the beauty of the printing and the decorations. A series of fine specimens will be found in this collection, ranging from 1490 to 1530. They were usually printed on vellum, in imitation of the manuscripts which they supplanted; and, to increase the resemblance still further, it is not uncommon to find copies in which all the pictures have been painted over in colours and gold, so as to look like miniatures. Lyons and other towns became also great centres for the production of admirably illustrated works, and worthy rivals to Nüremberg, and the other cities of Germany, in the book trade.

When Caxton introduced printing into England, and set up the first press at Westminster, about 1476, he brought with him also the new method of multiplying pictures for book illustration. But, though he employed it largely, the best cuts in his books are foreign productions, and the rest such rude things as any clever lad might draw and then cut with a penknife. Such, also, are the embellishments to the works of Wynkyn de Worde and the other early printers. The same may be said of nearly all English books down to the time of Bewick (1753—1828), before whom no school of designers or wood-cutters existed in England. Thomas Bewick was, indeed, the father of wood-engraving in this country. Nothing could be lower than the state of the art when he appeared. Himself no mean artist, possessed of extraordinary mechanical dexterity, he devoted all his energies throughout a long life to improve his art. He thoroughly understood all its capabilities, and knew how to produce the greatest possible effects with the smallest amount of labour. Some of the birds,—as the partridge, the woodcock, and the common duck,—in his Land Birds, are wonderful things in their way, for the perfect fidelity with which he has expressed the plumage and general texture of the bird. Yet his pupil, Jackson, tells us that he would execute such a cut in less time than a modern French engraver would take to execute the delicate cross-hatchings necessary, according to French taste, to denote the grey colour of a soldier's coat. Much might be written, also, on the humour and spirit of the numerous head and tail pieces which he designed; but they are better seen than described. He also trained quite a school of eminent wood-engravers, to whom we owe the present advanced state of the art in England. The productions of Bewick and his followers are admirably represented in the present collection.

In the great social progress of the last fifty years, the wood-engraver has played almost as prominent a part as the printer. It is difficult for the present generation to realise the enormous advantages they enjoy over their fathers in the attainment of knowledge. Contrast the infinite variety of books and periodicals now supplied for children, well written and admirably illustrated, communicating information in a thousand pleasant ways, with the miserable trash, scanty in amount and wretchedly illustrated, that was supplied to the children fifty years ago! The fountain of wisdom and knowledge in those days gave forth nothing better than Histories of Jack Sprat, his Wife, and his Cat, Tom Tucker, Mother Bunch's Fairy Tales, and so on. And thus matters had gone on for hundreds of years! But a new era commenced with the publication of the *Penny Magazine* in 1832, followed by the other attempts of Charles Knight and the Society for Diffusing Useful Knowledge to produce a cheap illustrated literature for the people. In 1842 the *Illustrated London News* was started. And these works were the pioneers of that vast illustrated literature which we now enjoy. The enormous demand that has thus been created for designers on wood has been well met; for it has produced such artists as Sir John Gilbert, Gustave Doré, John Tenniel, Harrison Weir, and Birket Foster. What, indeed, can be better fitted to express the myriadfold mind of the time,—struggling to express itself in new forms of act and thought,—than that intimate combination of woodcut illustrations with text which forms so large a part of our current literature? Happy the men who are born under such influences: such multiplied means of knowledge! Let them prove themselves worthy their opportunities.

JOHN NEWTON.

CONCRETE HOUSE IN GERMANY.

MR. LIEBOLD, an architect of Holzminden, has published in the *Deutsche Bauzeitung* an account of a dwelling-house of concrete, lately built by him in Vorwohle for a gentleman engaged in the manufacture of Portland cement. The *American Architect*, quoting this account, says:—"Although the house was quickly built, it yet seems to contain a *tour-de-force* of almost every constructive form for which concrete can be employed. The rooms are covered with various kinds of vaults, many of which have a very considerable span. Over the vestibules of the different stories,—spaces 13 ft. by 17 ft.,—three vaults are superimposed without the use of iron, and depend solely upon the vaults of the adjoining rooms for a counteraction of their side-thrust. The original and striking feature of the building is the great cloister-vaulted roof, which, resting on the four principal corners of the structure, rises through a story and a half. At its base, the concrete of which it is formed is 1 ft. in thickness; at its summit, only from 4 in. to 5 in. It is to be regretted that it has received no architectural expression on the exterior; the objectionable Mansard is excused by Mr. Liebold on the ground that it was desired by his client. The outer walls of the house are 1 ft. thick; division-walls and partitions being from 8 in. to 10 in. thick. In the cellar these dimensions are increased by 4 in. The walls are anchored at suitable points, and were built above-ground by means of adjustable wooden boxes, into which the cement was poured. Below-ground, the cellar and foundation-walls were cast in trenches, the cellar itself not being excavated until after their hardening. The trenches, consequently, were dug to the depth of the cellar below the level of the earth, plus that necessary for the foundation below its floor. This total depth must have been between 7 ft. and 8 ft., and can only have been obtained in firm soil.

The concrete employed was composed of one part cement to seven and four parts respectively of gravel and sand. The stairs have treads of slate, and are cast so as to measure on the string 4 in. at the re-entrant and 7 in. at the outer angle of each step. In them a coal-slag was substituted with good effect for the gravel; the weight of the concrete thus prepared being but from one-half to one-third that of the concrete made with stone. The cornices, window casings, steps, &c., were formed of three parts of sand to one of cement, and were ready to be walled, or rather cast, into the walls, as the building advanced. The entire cost of the house, which is in effect a cube with a side of between 50 ft. and 55 ft., was $4,300, gold. From the itemised account it appears that all the interior vaulting cost $420; the stairs, $82; and the roofs and the platform, $438,—all in gold. The cost of the concrete walls, including the wooden forms, &c., was 13½ cents per cubic foot. The building was completed in four months, and its construction may be regarded as thorough in every respect. Immediately after it was roofed in, the inspector of buildings ordered the floors throughout the house to be weighted with 65 lb. to the square foot. This great weight did not produce the slightest hurtful effect on the vaults,—not even a crack in the plasterings. As a preliminary experiment, a pair of concrete vaults were built last year in Vorwohle over a space 13 ft. or 14 ft., the length of which was divided into two equal parts by an iron I beam; the walls, also of concrete, were 12 in. and 8 in. thick. The centre of this vault was weighted on a space containing 31 square feet with a weight of five tons, that is to say, over 330 lb. to the square foot; yet there was no displacement or crack either in the walls or vaults. As a further example of rapid construction, a bridge was built of concrete, and prepared for use in six working days, which was 24 ft. long and 12 ft. wide; and a smaller concrete dwelling-house, 43 ft. by 30 ft., was entirely completed in seven weeks. It is to be hoped that the official experiments now being made by the Polytechnic of Brunswick upon the strength and reliability of concrete will soon be made public, as their results bid fair to be surprising."

ALTAR, ST. MARY'S ABBEY, STANBROOK.

THE altar, illustrated in our present number, was designed by the late Mr. E. Welby Pugin, architect, and is erected at St. Mary's Abbey, Stanbrook, near Worcester. The materials used are Caen stone for the body of the work, marble pillars to support canopies, marble shelves to super-altar, and granite columns to altar-table. The tabernacle is wrought in alabaster. The work was carried out by Mr. Boulton, of Cheltenham.

BROAD-STREET WARD FOUNTAIN.

A DESIGN by Mr. J. S. Edmeston has been approved by the Wardmote, and will doubtless be worthy of the Ward.

The base, with four basins, will be of red and grey granite of different tints, and the whole polished. Messrs. Freeman, of Penryn, have the work in hand, and promise to have it ready to fix by May 1st.

The canopy will be of bronze, wrought in the best manner, and is contracted for by Messrs. Hart, Son, & Peard, the art metal-workers.

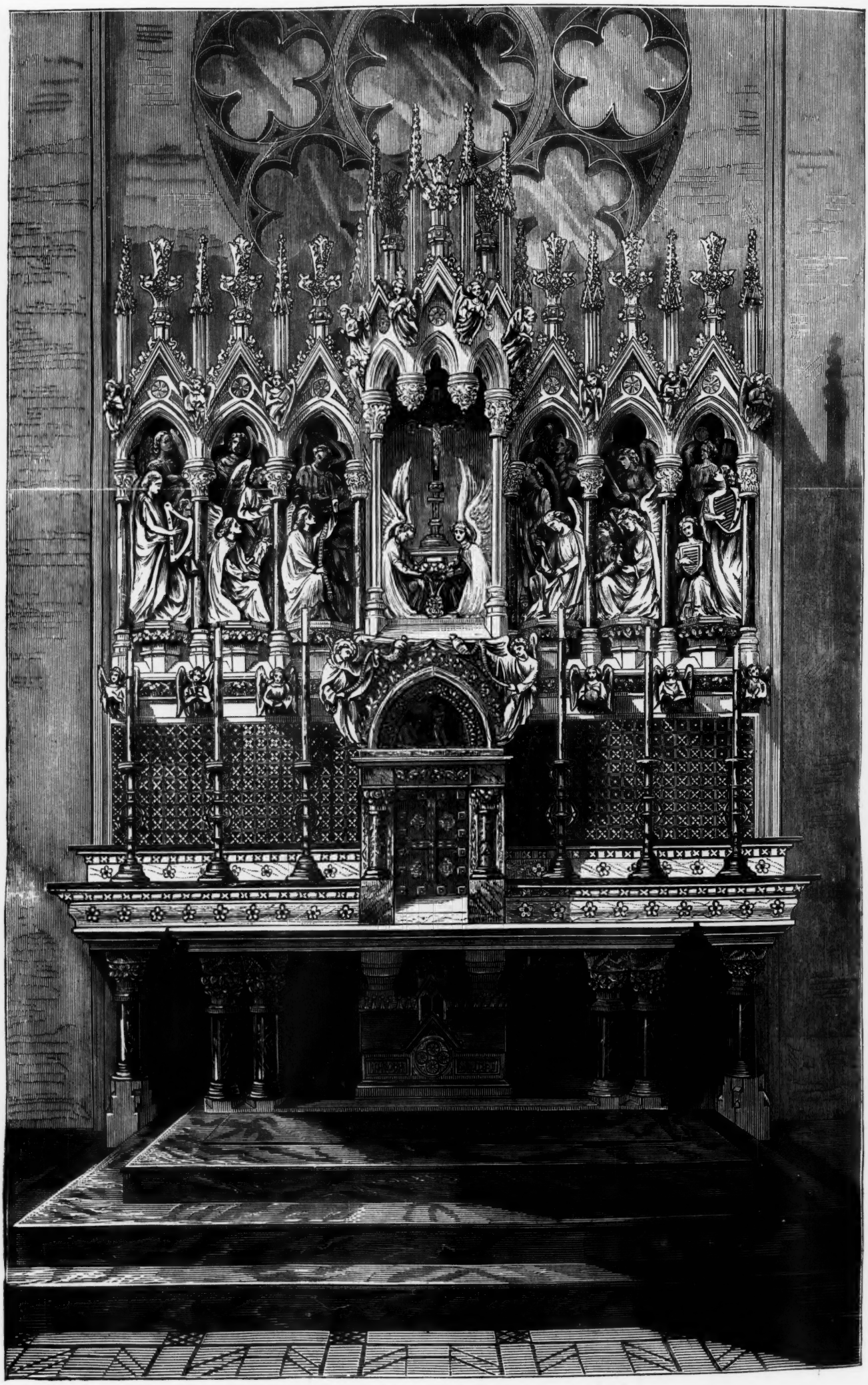
The group of statuary in white marble, called "Charity," has been modelled by Mr. Dalou, the well-known sculptor, and may be seen at his studio, Glebe-place, Chelsea.

"The Drinking Fountains Association" have shown their interest in the matter by undertaking to supply all the hydraulic work, and to set up the fountain without charge.

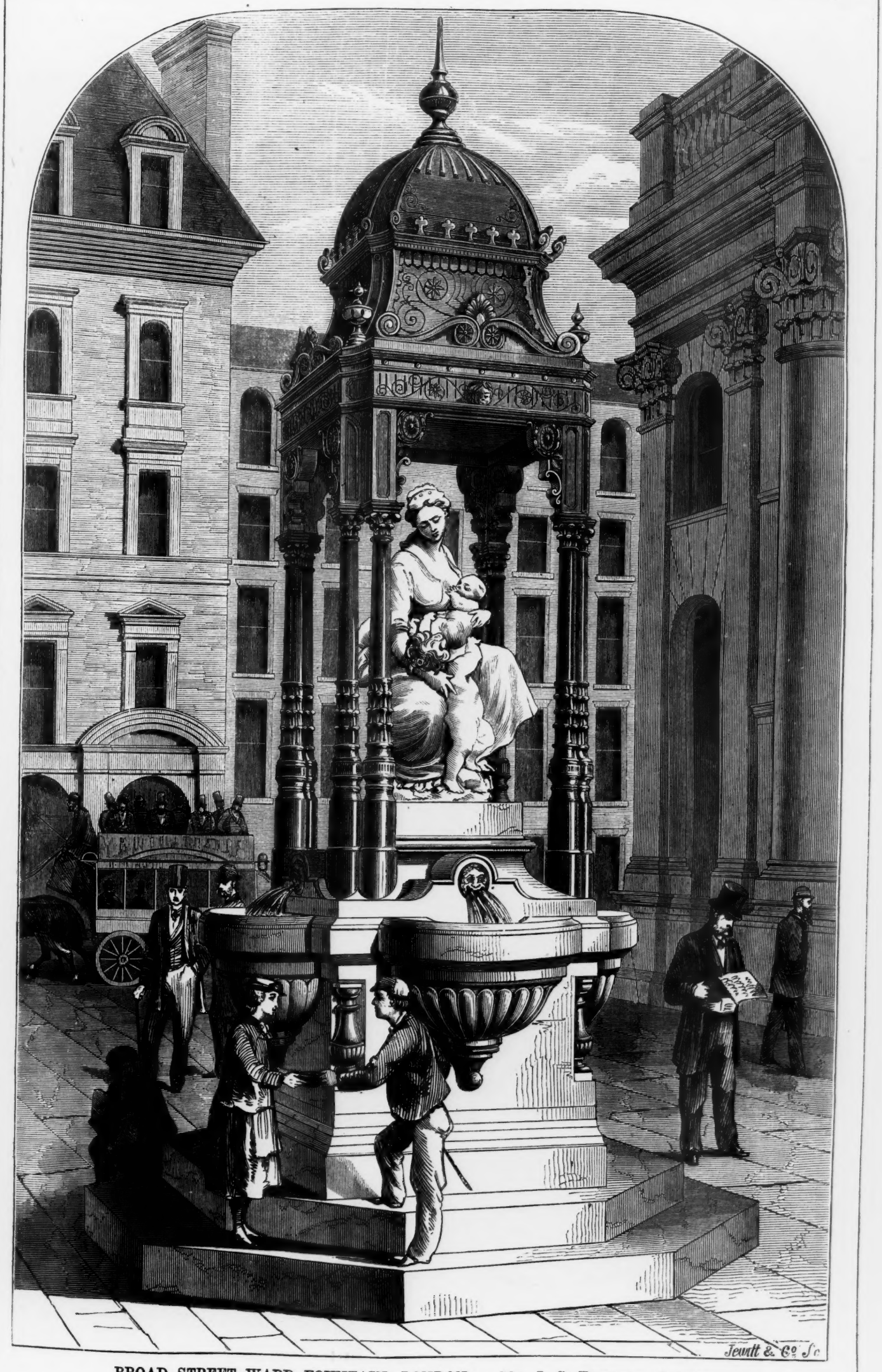
The cost of the base and canopy, and some incidental expenses, will be 500*l*. Towards this Mr. Alderman Ellis contributes 150*l*., Mr. Deputy Hartridge gives 50*l*., and the Wardmote has voted 200*l*.

The alderman has also promised 50*l*. towards the group of statuary, which will cost 300*l*.; the deputy, 25*l*.; and the wardmote, a further 50*l*. The remainder, it is believed, will be readily made up by some of the leading corporations in this, the richest of the City wards, which includes within its area the Bank of England, London and Westminster and other leading Banks, several of the chief insurance offices, and other wealthy institutions.

Mr. Alderman Ellis is treasurer of the fund.



ALTAR, ST. MARY'S (R.C.) ABBEY, STANBROOK.—The late Mr. E. Welby Pugin, Architect.



BROAD STREET WARD FOUNTAIN, LONDON.—Mr. J. S. Edmeston, Architect.

THE LATE SIR G. GILBERT SCOTT, R.A.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

In consequence of the sudden and lamented decease of Sir George Gilbert Scott, R.A., past-president, the ordinary general meeting of this Institute announced for Monday evening last did not take place, but the President and Council convened a special general meeting of members only* "for the purpose of considering what steps should be taken to do honour to Sir Gilbert's memory."

The President (Mr. Charles Barry) said the members were acquainted with the sad circumstances under which they met, and he did not think it was necessary that he should make any apology for putting off the ordinary meeting and calling a special meeting under the circumstances of the loss which had so unexpectedly and so sadly befallen them. Early on Thursday morning last he received a notification of the death of their distinguished and dear friend, Sir Gilbert Scott, from his eldest son, Mr. George Gilbert Scott. It was as follows:—

"Courtfield House, Collingham road,
South Kensington, March 27th, 1878.

My dear Sir,—It is my painful duty to inform you of the death of my father, Sir Gilbert Scott, which occurred early this morning. My father had been slightly unwell for the last few days, but there had been nothing to cause any anticipation of danger.

I am, my dear sir, yours very faithfully,
G. Gilbert Scott, Jun.

To the President of the Royal Institute of British Architects."

To that note he had replied, expressing his condolence and that of the members of the Institute. Having consulted with Professor Donaldson and others of his colleagues, he had taken the steps already mentioned on his own responsibility, and the Council had condoned his proceedings. What the meeting had to consider was how the members of the Institute might, in the short space of time which intervened between that evening and the end of the week, take such steps as he was sure they would desire to take to show their personal appreciation of the great loss which they had all sustained. They were not met for the purpose of taking any permanent measures with respect to their departed friend's memory,—such considerations would be premature at that moment,—but to occupy themselves with the sad preparations which all of them felt they ought to make for taking part in his funeral. Sir Gilbert Scott was to be interred in Westminster Abbey, on Saturday next, at twelve o'clock, and the Council had appointed a small committee to take the necessary measures in order that the Institute might be properly represented at the funeral. In his letter of condolence to Mr. Gilbert Scott, he suggested that the Institute would very earnestly desire that Sir Gilbert's burial might take place in the Abbey with which he had been officially connected for so many years, and which was on other grounds so fitting a resting-place for so distinguished a man. At the same time, he wrote a private letter (inasmuch as he was not officially authorised to write) to the Dean of Westminster, expressing the same desire. That letter was as follows:—

"March 28, 1878.

Dear Mr. Dean,—I am sure you will pardon my writing to you, as President of the Royal Institute of British Architects, to tell you that a very wide-spread hope is entertained by its members, with whom I need hardly say I fully sympathise, that our departed illustrious friend, Sir Gilbert Scott, should find his last resting-place in the Abbey he loved so well. I have summoned a meeting of the members of the Institute for Monday afternoon, and I should be very grateful to you for a few lines on the subject to show them.

I have the honour to be, yours very faithfully,
Charles Barry.

The Very Rev. the Dean of Westminster."

To that note the Dean had replied as follows:—

"Deanery, Westminster, March 28, 1878.

My dear Sir,—I fully concur in the purport of your note. On these occasions I endeavour to make it a rule not to take the initiative, but to wait till I receive a request from the distinguished members of the department to which the deceased belonged. In this case, owing to my absence from home, and also considering the close official connexion of Sir Gilbert Scott with the Abbey, I ventured to break through my own rule, and to make the offer at once to the family, who have gratefully accepted it. I should still, however, much prefer that the members of the Institute should present me a request (signed by any other distinguished persons that occur to you), which should be my public warrant for the interment, which on personal grounds I am entirely willing to sanction. Being very desirous of paying the last tribute of respect to our respected friend, I have asked the family to delay the funeral, if possible, till Saturday, the 6th, when I trust that my medical advisers will allow me to be present, as well as to preach on the 7th.—Yours very faithfully,
A. P. Stanley."

The following reply was received from Mr. Gilbert Scott:—

"Courtfield House, Collingham-road,
South Kensington, March 28, 1878.

My dear Sir,—The Dean of Westminster has written to me proposing that my dear father's remains should be interred in the Abbey. He says that he usually prefers to wait for some sort of requisition from distinguished men in the department of life to which the deceased belonged, but that my father's special relation to the Abbey has led him in this case to act upon his own responsibility. He will, therefore, be particularly gratified to receive from the Royal Institute the assurance that the step he has taken is in accordance with the wishes of the Institute and the profession. I need not say how gratifying the proposal which your letter indicates is to all our family. My dear father would have appreciated nothing so much as this recognition of his worth by the members of the profession he loved so well. I have written to the Dean, mentioning the purport of your letter.

I am, my dear Sir, yours very faithfully,
G. Gilbert Scott, Jun.

P.S.—I will take care to inform you at the earliest moment of the day and hour fixed. I believe it will be Saturday, the 6th.

To Charles Barry, esq., President of the Royal Institute of British Architects."

Mr. Barry went on to say that it had appeared to the Council that there were two points to which the members of the Institute ought to direct their attention at that meeting. The first was to testify to their personal appreciation of the great abilities which had secured for Sir Gilbert Scott his great fame, and to put upon record their deep sense of the great loss which the Institute, the profession, and the country had sustained by his decease. The second point was to take into consideration the arrangements to be made for enabling the Institute in its corporate capacity to take part in the obsequies at the Abbey. With regard to the last point, a circular letter would be sent to every member of the Institute inviting him to attend the funeral, and giving all necessary particulars. The ante-service would probably take place in the choir, to which, of course, only a limited number could be admitted, but the Abbey was large enough to contain all the members of the Institute and Sir Gilbert Scott's numerous friends outside of the profession, and he (Mr. Barry) felt sure that the members of the Institute would form no small part of the assemblage, both on the day of the funeral and on the occasion of the Dean's sermon on the 7th. He might mention that he had written to the Royal Academy, asking what steps that body had already taken or proposed to take to be represented at the funeral. In reply, he had received a note from Mr. Eaton, the secretary, stating that the Council would meet on Wednesday, and would then decide what they would do in the matter. He had also received letters from Mr. Beresford Hope, M.P., the president of the Architectural Museum, expressing his desire to co-operate with the Institute in paying the last tribute of respect to their deceased friend, from Lord John Manners, and from the First Commissioner of Works, who regretted his inability to attend, but expressed his desire that the Office of Works should be officially represented at the funeral, hoping to be able to represent it in person. Letters had also been received from Mr. Thomas H. Wyatt, past-president (who was in Ireland, and, therefore, could not be at the meeting), and from Mr. Benjamin Ferrey, who wrote to say that nothing but his serious ill-health could have kept him away from the meeting. [While speaking, Mr. Barry received a note from Mr. Gilbert Scott, saying that the procession would assemble in the Jerusalem Chamber at half-past eleven on Saturday, the interment being fixed to take place at twelve o'clock.] The Council had appointed, as a sub-committee to carry out the necessary arrangement, the two secretaries and himself (the President), inasmuch as it was thought that a small executive would be sufficient to act in such an emergency. With regard to the desire which he was sure existed on the part of the members of the Institute, individually and collectively, to place on record their feelings on the present sad occasion, the following letter had been drafted, and would, if approved of by the meeting, be at once sent (signed by the President, and bearing the corporate seal of the Institute) to the family of Sir Gilbert Scott:—

"The President, the Vice-Presidents, and the Council, the past Presidents, and the Members of every class of the Royal Institute of British Architects, hereby desire to record their due appreciation of the loss sustained in the death of their colleague and past-president, Sir George Gilbert Scott, R.A. They humbly deplore that it was not permitted him to complete even the seventy years of man. But that his life, comparatively short, was busy and eventful, his works remain to attest: half the cathedrals of England, and many an English village, preserve some memorial of his genius. New and important buildings in London, Edinburgh, and Glasgow; in other parts of this country; in Hamburg, Newfoundland, and Bombay, bear witness to his skill. His great reputation, earned and closed by unremitting industry, is the growth of forty years. If, during that time, lost links in the chain of building tradition have been recovered, it is largely due to his diligent investigations. Efforts, in which he was zealously aided by many who survive him, and by a few who are gone, were, it is true, mainly concentrated upon methods of *architecture* which he deemed *national* to England; but they have resulted in the advancement of all art by fostering the study of every style. To-day the archæologist who delights in the works of our Mediæval countrymen is not less eager in research among the older ruins of Europe than among the traces of habitation in Egypt and Asia. In the kindling of such enthusiasm Sir Gilbert had a prominent share; in forming and directing the taste of students, who rarely sought his advice in vain, he was earnest and successful. Opponents, inevitable in the struggle for professional fame, but never personally other than friends, join in this imperfect homage to merit. That merit, it is our consolation to remember, did not remain without formal acknowledgment. At a time when the competition for conspicuous eminence is great and various, he has honourably worn the prizes of professional life. The Queen's Medallist in 1859, a Royal Academician in 1860, he became our President in 1873. He left the chair in 1876, strengthened by the kindliest sentiments of brethren and friends, whose wish and endeavour it has been, now death has deprived them of a foremost man, that his mortal remains might repose in Westminster Abbey, with which for a score of years he has been identified. United in the grave with great colleagues who have preceded him, he will there rest amid associations he helped to render popular, and beneath the shadow of walls which to him were as an open book in the history of architecture.—Charles Barry, President."

The Council (Mr. Barry continued) felt that the above address would be esteemed by Sir Gilbert's family as an heirloom. All that he had said so far was in his official capacity as President of the Institute, but personally he felt very deeply indeed the loss which he, in common with the rest of the members, had suffered by Sir Gilbert's death. They had come into competition more than once, but professional emulation had never interfered with personal friendship, and that friendship had continued, most thoroughly and entirely, up to the last. He had occasion, a short time ago, to give an address to the Sheffield School of Art, and in doing so he ventured to make a remark to the effect that our students of art, whether in architecture, painting, or sculpture, need not go for inspiration abroad, and incidentally he instanced, amongst others, the works of Sir Gilbert Scott as those of a living architect, and as worthy of study. Little did he (the speaker) think that Sir Gilbert would so soon cease to be with them. He was quite sure that when the history of architecture came to be recorded in future times, the name of Sir Gilbert Scott would occupy a foremost place in the glorious roll of those who had served their art and generation. It was their duty and privilege to take the first step in doing honour to the memory of Sir Gilbert Scott as the leader of their art, by adopting some such address as had been read. He would say no more. His feeling was strong and his heart was full, and he knew that there were other gentlemen present who were anxious to give emphasis to what he had ventured to say.

Mr. A. J. B. Beresford Hope, M.P., said that, like the President, his heart was full. He was sure that the suddenness of the event must have appalled them all. He first heard of it when in one of Sir Gilbert's own buildings,—the Foreign

* Although the meeting was "special," it was, in view of the public nature of the subject to be discussed, very properly determined to suspend the rule (written or unwritten) which precludes the attendance of reporters at "special general meetings," and, more than this, reporters were specially "invited to attend." The rule in question might have been usefully relaxed on some previous occasions without disadvantage to the Institute.

Office. He was remarking to a young friend who accompanied him that the building was by Sir Gilbert Scott, when some one said, "Sir George Gilbert Scott is dead!" The news greatly shocked him. Within the sixty-six years of Sir Gilbert Scott's life an amount of work had been crowded which few men of longer years could look back upon. It was a great and distinguishing peculiarity of Sir Gilbert Scott that he was not only an indefatigable worker, but one all of whose work told. He never hit "wild,"—he knew what he meant, and carried it out. He was, moreover, a great administrator, and was a potent influence in a great movement. He was a centre of thought and action, and was distinctly speaking a representative man. That was a much-abused phrase, but in his case it was peculiarly and curiously appropriate. What some of them knew, and what the world did *not* know, was that, with all the weight of work upon him, he possessed a determination to carry out what he believed to be right,—for with him work and art meant duty, and he did what he did from a conviction that he was doing right, and from a conviction that the eternal order of things combined form and proportion in things material as well as in things beyond the material. That was a great characteristic of their lost friend. With all his knowledge, they knew how truly modest he was: if anything, he carried that to a fault. He was ever anxious to do his best, and was, perhaps, over-sensitive to the criticism of others, feeling hurt at what he could have afforded to laugh at. Those who had not the privilege of his personal acquaintance very little appreciated the amiability of his character. With all his zeal, all his earnestness, all his strong convictions, he never bore malice. He would take blows and give blows, as a man should do, but he never bore malice. The real greatness, genuineness, and affectionateness of his nature kept him clear of the petty clouds and cyclones of the active and turbulent art-world in which he lived. He was quite sure that it was the instinctive feeling of them all when they realised the extent of their loss, that Westminster Abbey, not only as the great historical type of that architecture which Scott so loved, but as the place which he had made his own by tender care, patient exploration, and judicious restoration,—that only could be his fitting resting-place. In the few lines which he had addressed to Mr. Gilbert Scott he said that Sir Gilbert's last resting-place ought to be the Abbey, and he was quite sure that the enormous majority of the letters which Mr. Scott had received would, on examination, be found to express the same opinion. He thanked the President for having given him an opportunity of sharing in the privilege of being present at that meeting and of taking part in its deliberations. He well remembered what he believed was the first funeral of a great man he ever attended in Westminster Abbey. That was the funeral of one who was a great architect, unhappily called away before he had filled the chair of the Institute. The members of the Institute looked upon the present President as worthily filling that chair, not only for his own deserts, but as his father's fitting representative. He begged to move the adoption of the address which had been read, with thanks to the Council for having prepared it.

Professor Donaldson, who rose to second the motion, said he was unable to say much. It was not easy, nor was it necessary, to find words in order to show the depth of the feelings he experienced. No words could describe how greatly he felt the loss which was common to them all. Sir Gilbert Scott commenced his career as a pupil of Henry Roberts,—a pronounced Classicist. He passed through his pupilage and the early phases of professional life with great credit, and gradually, by perseverance, arrived at the eminent position which he was so well worthy to occupy. There was much in the personal character of Sir Gilbert Scott which endeared him to his friends. He was kind and generous, although to a degree reserved. He deeply deplored the death of a man who was so much and so deservedly honoured, not only for his work but for his personal character.

Sir Edmund Beckett, Q.C., said he was thankful for the invitation which had been sent to him to take part in that meeting, for he had had the pleasure of knowing their departed friend for the last twenty-five years. Just a quarter of a century ago they were both engaged in one of the greatest works in England with which Sir Gilbert's name was identified, namely, the rebuilding of Doncaster Church; and since that time down to the present day they had been closely associated in some way or other, sometimes in private works, sometimes in public works, and latterly they had been much in contact in connexion with the work in progress at St. Alban's. Of Sir Gilbert's public works it was unnecessary to speak. It was said of Wren, "Si monumentum requiris, circumspice"; and it might be said of Scott, in a wider sense, "Si monumentum requiris, circumspice Britanniarum." There was now in existence a school of anti-restorationists, and if the members of that school would take themselves back thirty years, and consider what would have been the state of things now with regard to churches had their ideas prevailed during that period, and had there been no Sir Gilbert Scott, perhaps they would find reason to moderate their views. He believed that Sir Gilbert Scott had been seriously affected by the writings and doings of that school, although he replied to them with effect; indeed, though his replies were unanswerable, those attacks upon him made him extremely timid even as to matters on which there could hardly be two opinions. Sir Gilbert Scott had done more than any other architect of his day, not only in restorations, but in new buildings, but he (Sir Edmund Beckett) believed that he would be more remembered for his restorations, for the simple reason that almost everybody who had a grand building to restore immediately went to consult him. Of the thirty-five millions which, according to a Parliamentary return, had been contributed by Churchmen for church-building and restoration within recent years, it would be interesting to know how much of it had been subscribed owing to the public confidence in Sir Gilbert Scott,—a confidence which prompted people to subscribe tens of thousands of pounds at a time when they knew he was to be the architect entrusted with the particular works in which they were interested. When people had come to him (Sir Edmund Beckett) to ask his advice as to employing Sir Gilbert Scott, he had replied, "If you employ him, you are sure to have nothing vulgar,—nothing in bad taste; you are sure to have everything preserved that is worth preserving, and so far as your building can be made equal to what it was before, it will be made in his hands." It was a curious fact that his largest work in England was not in his own style, and that the largest work he ever had was not in this country. Many of his new works, such as Doncaster Church and the Chapel of St. John's College, Cambridge, would individually have made the fame of any architect. There was a singular beauty in his private character. A wilful man like himself (Sir Edmund) did occasionally differ in opinion with Sir Gilbert, but he had never known a professional man of any kind who was so thoroughly candid, so ready to listen to what could be said against his views, and so ready to confess to a mistake when he found he had made one. He was always anxious to avoid taking credit not thoroughly belonging to him, and withal, he was most kind and unassuming, never taking undue advantage of his position or knowledge, though his very modesty sometimes led others to under-rate his abilities. He (Sir Edmund) once heard some one say, "I can't think Sir Gilbert Scott is a man of genius." Sir Edmund asked why not? The reply was, "Listen to his talk!" Sir Edmund said, "Well, listen to his talk! There is no clatter, there is no overwhelming you with noise, but behind his quietness of demeanour there is vast thought and learning, and he always imparts to you something you did not know before." He had many marks of a man of genius, and he was the most honest, the most candid, the most forbearing, and, in every sense of the word, the pleasantest man he (Sir Edmund) had ever met with. In conclusion, Sir Edmund suggested that if it were desired to commemorate the achievements of so distinguished a man in some tangible form, they could hardly do better than promote a fund for the purpose of restoring the west end of St. Alban's Abbey, in which he took so much interest up to the last moment of his death, and into which he had been pursuing careful investigations for some time past at his own cost. He (Sir Edmund) believed that if it were possible by any means to ascertain Sir Gilbert's wishes as to the shape which any memorial to him should take, he would attach supreme importance to the west end of St. Alban's Abbey. The work in question could be carried out for about 9,000*l.*, according to a rough estimate given by Sir Gilbert himself. Such a memorial would be far more lasting and appropriate than the erection of a separate memorial.

The President remarked that, in the last portion of his speech, Sir Edmund Beckett had entered upon a subject not then under consideration. No doubt the Institute would subsequently have the subject before it, and if Sir Edmund would put into writing any proposals or suggestions he had to make, and forward them to the Council, they would be duly considered at the proper time. He had just received a note to say that her Majesty the Queen intended to send a carriage to join the procession.

Mr. A. B. Mitford, of her Majesty's Office of Works, said he attended that evening not only on his own behalf, but on behalf of his chief, the First Commissioner of Works, who desired him to say that he regretted his inability to attend owing to his Parliamentary duties. To him (Mr. Mitford) it would always be a melancholy recollection that, on the first occasion on which he was able to avail himself of the privilege of attending the meetings of the Institute, its members should be mourning for the sudden extinction of so great a light in architecture; and the recollection would be still more sad from the fact that, when he was a candidate for admission to the privileges of an Honorary Associate of the Institute, Sir Gilbert Scott was one of those who were good enough to stand his sponsors. The connexion of Sir Gilbert Scott with the Office of Works had been one not of recent years, but of long standing, and it was a connexion which could only have been severed by death,—for it would have been impossible for the Office of Works to cease to avail itself of the ability of a man like Sir Gilbert Scott, so long as that ability was at its service. Having had access and having had to consult the records of the Office of Works for many years past, he could say that so far as they related to Sir Gilbert Scott they were one tribute to the uprightness and nobility of his nature,—to his intense trustworthiness and loyalty in business. He (Mr. Mitford) had been that morning talking over the lamentable event with one who had been associated with Sir Gilbert Scott for more than forty years, and who testified that he had never come across a more perfect type of a truly Christian gentleman than Sir Gilbert. It was the wish of the First Commissioner of Works that the Institute would allow him to be associated with them in any arrangements they might make to do honour to so great a man, and he hoped to be able to attend the funeral.

Mr. G. E. Street, R.A., said he felt unable to say much, but inasmuch as he was one of the first of those who had taken their earliest lessons in architecture from Sir Gilbert Scott, he should be sorry to lose the opportunity of saying how greatly he deplored the death of that great and good man. His knowledge of Sir Gilbert extended over thirty-three years. It was thirty-three years ago since he entered Sir Gilbert's office, and as he remained with him for some years he was able to bear testimony to the extreme courtesy, kindness, and considerateness displayed towards the, in some cases, troublesome young men he had in his office. His modesty was a marked characteristic of his nature. The profession and the country had sustained a great loss.

Mr. Bodley, as an old pupil of Sir Gilbert's, endorsed all that Mr. Street had said.

Mr. Joseph Clarke said he had been for a great many years associated with Sir Gilbert in connexion with the work of the Incorporated Church Building Society, and latterly they had been also associated in connexion with the work of the Architectural Museum, in which Sir Gilbert took so great an interest. Only last week he had been considering arrangements for the delivery of some lectures to workmen, in connexion with the Museum, in the Chapter-house: so that whatever might be done at St. Alban's or elsewhere, he was quite sure that a most fitting memorial to Sir Gilbert's memory would be for the profession to do something for the Architectural Museum, which was greatly in need of succour. The Institute was to be congratulated on the possession of the fine portrait of Sir Gilbert by Richmond.

Mr. Ewan Christian said he, too, had known Sir Gilbert for a great many years, and knowing what interest he felt in the Architectural Museum, it was greatly to be hoped that some-

thing would be done to perpetuate his memory in connexion with the Museum. The exceedingly kind manner in which Sir Gilbert was willing to meet classes of workmen, and to give them all the information he could while conducting them over the Museum or some old building, would be remembered with gratitude. Those who knew the history of the Museum knew how hard he worked, from its establishment to the end of his life, to forward its interests, for he attached very great importance to the work it was calculated to do if properly appreciated and supported. As to his personal qualities, he was the kindest and pleasantest man he had ever known, and was a delightful companion for a visit to an old abbey. He was full of knowledge, sympathy, and enthusiasm for his art up to the very last moment of his life.

Mr. Nevill said that, as an old pupil, he should like to add his testimony to what had been said by Mr. Street and others as to Sir Gilbert Scott's consideration for his pupils. Everybody, indeed, who had been in his office would say the same thing. He was most kind in directing them as to what books and buildings they should study. He had a marvellous capacity for work, and was most conscientious in all that he did. Nearly every drawing for every single detail and moulding went through his hands, receiving revision where necessary, which generally happened to be the case. It had been sometimes imagined that, with his very large practice, a great deal of work was done in his office of which he knew very little, but such was not the case. The amount of work he got through was marvellous,—many hours that other men devoted to social pleasures being spent by him at home in going through drawings of the works he had in hand.

The President said that under the great loss they had sustained he was quite sure that all criticism would be silenced. There were, however, some gentlemen present who had taken part in the discussions which Sir Edmund Beckett had alluded to as having caused some pain to Sir Gilbert's sensitive nature; but he was quite sure that Mr. Stevenson would say that although professional differences existed between him and Sir Gilbert, personal differences never did.

Mr. J. J. Stevenson said he could only say that his old friend Mr. Gilbert Scott wrote to him informing him of Sir Gilbert's death. The intimation filled him with astonishment and sadness, but he thanked Mr. Scott sincerely for including him among those who were sorrowing for the great loss they had sustained.

Mr. J. T. Micklethwaite, as an old pupil of Sir Gilbert's, and one who had worked under him for nearly twelve years, reiterated what had been said by previous speakers as to Sir Gilbert's personal qualities, and said Sir Gilbert Scott possessed a knowledge, such as was probably never equalled, of the details of English architecture.

Mr. Charles L. Eastlake (late secretary) said,—I greatly regret that the first meeting of this Institute which I attend since my retirement from office should be convened for so melancholy a purpose as the present, and that the first discussion in which I take part, as an ordinary member, should relate to so painful a subject. It is especially painful to me when I recollect that I was Sir Gilbert Scott's guest at Ham, some years ago, while he was attacked by a sudden illness,—perhaps the first indication of that infirmity which has terminated in his death, though, until quite lately, there seems to have been no great cause for alarm. I should be sorry to leave this room to-night without saying a few words, by way of respectful tribute on my part to Sir Gilbert's memory. His professional talents, and indeed his private virtues, are so well known, and have met with such ready recognition from all present, that I could add but little to what has been already said on those points. But I trust that, as your late secretary, I may be permitted to refer, very briefly, to Sir Gilbert's position as our former president, and to acknowledge, as I do most gratefully, the uniform kindness and courtesy which he showed to me throughout all our official relations. There are, as we know, many occasions when, in acting under instructions, or in carrying out the policy of the governing body of such a society as this, the secretary requires the support,—the steady and outspoken support,—of its president. Such support Sir Gilbert Scott, notwithstanding his natural diffidence and characteristic reserve, never failed to accord, and I can truly say that both during his term of office, and subsequently, I found in him what no one can prize too highly,—the generous adherence of a staunch and loyal friend. It is gratifying to find so unanimous an adoption of the council's judicious proposal, and I hope we shall all unite next Saturday in paying the last sad honours to our late esteemed and distinguished colleague.

Mr. R. W. Edis having said a few words,

Mr. Edmeston said he wished to correct a mistake which Professor Donaldson had fallen into. Sir Gilbert Scott did not serve his articles with Mr. Roberts, but was articled (as was also Mr. Moffatt) with his (Mr. Edmeston's) father.

The President having formally put the motion, it was carried unanimously, and the meeting closed after the announcement that the ordinary general meeting which would otherwise have been held on that evening would take place on Monday next, when Professor Donaldson will read his promised paper on Egyptian obelisks.

THE DRAINAGE AND STATE OF IPSWICH.

In the report for 1877, on the sanitary condition of the borough and port of Ipswich, the medical officer of health, Mr. G. Sampson Elliston, says,—"The question of thoroughly draining the borough of Ipswich has been so frequently discussed by you during the last two years, and the absolute necessity for carrying out a complete plan so well known, that it is unnecessary for me to again bring under your notice how much of the past and present defective sanitary condition depends on the want of sewerage. The Town Council have unanimously adopted Mr. Bruff's plan, a plan that has stood the test of twenty years, and one that will, no doubt, immensely relieve the town when completed. The state of some of the principal thoroughfares has become worse and worse, and Tavern-street, as well as St. Matthew's-street, cannot possibly go through another summer without something being done for them. The nuisances that came under my notice at some of the premises in those streets last autumn were positively dangerous, and often on sultry nights, when the inhabitants were asleep, I have noticed the air heavy with mephitic odours." Half the sewage of Ipswich goes into dead-wells and half into a system of old sewers. Half a million gallons of sewage go into subsoil every day. The Corporation has only been twenty years deciding whether Ipswich should be properly drained, and although it was decided to make the main outfall sewer nearly three years ago, it is doubtful whether the works will be commenced this year. During this time valuable lives have been lost, including one M.P., from fever.

LIVERPOOL ENGINEERING SOCIETY.

At the usual meeting of this society, held on Wednesday, March 27, Mr. Robinson Souttar, president, in the chair, Mr. W. W. Squire, hon. sec., read a paper "On the Manufacture of Portland Cement," giving a detailed account of a visit to the works of Messrs. Peters, Brothers, situated on the Medway, about five miles from Rochester, and of the various processes seen in operation there. The chalk-pit was first described, with its two distinct strata of chalk, the upper, or white, being used for lime, while the lower, or grey, is especially valuable for Portland cement. This grey chalk is incorporated with about one-fourth its weight of clay in a pug-mill supplied with warm water, and is then run off to a settling pond or "back," where the superfluous water is gradually drawn off from the top. The sediment, or "slurry," is next dried on a floor especially provided with flues for the purpose, and is then burnt in kilns, and finally ground between millstones to a high degree of fineness, when it is ready for use as Portland cement.

Lowestoft.—At a meeting of the Lowestoft Improvement Commissioners, held on the 25th ult., a resolution was passed to the effect that application be made to the Local Government Board for permission to borrow the sum of 2,000*l.* for the purpose of constructing a main intercepting sewer and other works, according to plans and estimates prepared by their surveyor, Mr. R. H. Inch.

SEA WALLS.

The floods in the Thames, which from time to time have recently attracted public attention, used to have something abnormal about them. Unfortunately, they appear from various causes to be things which we must be prepared to deal with as of constant, or at least not infrequent, occurrence. But in some of the eastern districts of England there has existed for many centuries an absolute necessity to keep out the water of estuaries or of the sea from the neighbouring lands. We, dwelling in more inland parts, have little need to trouble ourselves with this matter, but it is one which has been and is of considerable importance to those who live in districts where the force of the sea or of rivers has to be constantly combated. One means of defence against what in an ancient statute were termed "the outrageous flowing surges and course of the sea," is by the erection or the preservation of sea-walls. Callis, who published his well-known work on sewers (meaning by that term any kind of drains and their concomitants), in 1824, holds that there is a distinction of some importance between sea-walls and sea-banks. For the former, he contends, being purely artificial in construction, and composed of stone, rock, or other materials not likely to be found in the exact spot where they are erected, are the property of the person who was bound to make them, whereas the latter, being generally created out of the soil on the spot, belong to the owner of the land on which they stand. As a matter of fact, however, the sea-wall of the present day appears generally to be a bank of earth and stones about 25 ft. broad at the base, and sloping to a width of about a yard at the top. They are often covered with grass; and as most tourists know who have been in counties where banks abound, the cattle scramble about them to graze on the grass. Thus, from these and similar causes, they need what is technically known as "topping" from time to time, in order to keep them in a proper state of repair, so as to resist the action of tides and floods.

And this protection of certain districts and their inhabitants from the power of the water was, in Mediæval times, regarded as a very high and important duty; indeed, in an ancient case, in the time of James I. (10 Coke's Reports, p. 141), the judges declared that by the ancient common law of the country, "the king ought of right to save and defend his realm as well against the sea as against the enemy, that it should not be drowned or wasted." For this purpose it may be fairly said, from time immemorial what have been known technically as commissions of sewers have been issued to certain persons, to empower them to erect walls and do all things necessary for securing lands of a low level from the ravages of seas or rivers. But the first actual statute for this purpose (6 Henry VI., c. 5), the first beginning of much subsequent legislation, was passed in the year 1427. Then, more than a century later, came the chief statute which has touched on this matter, and always known as the Statute of Sewers, 23 Henry VIII., c. 5, passed in 1531. Various other Acts were passed from time to time to enlarge or increase the powers of the commissioners of sewers who were from time to time appointed under these enactments. Of the latest, perhaps the two most important were 2 William and Mary, sess. 2, cap. 8, and 3 and 4 William IV., cap. 22, which set at rest any doubt which previously existed as to the power of the Commissioners to erect new walls, as well as to keep those in repair which had been previously erected. Therefore, broadly stated, the law now stands that where there is a public wall, or a wall erected by public funds to keep out the sea, the Commissioners have power to keep such wall in repair by means of the assessment which it is in their power to levy over the inhabitants of the district which is benefited by such wall; and where it is necessary to build a new wall they have power so to do. But it may also happen,—as indeed it frequently does,—that the wall which protects the property of a number of persons is on private ground, and has been from time to time repaired by the owner of the soil on which it rests. Then comes this very important question: is the owner of such land bound to repair this wall when necessary? And as a corollary on this primary question hangs the other, supposing that he fails to keep it in repair, and in consequence the sea or the river rushes on to his neighbours' land, and does more or less damage, is he liable for

such damage? A case which was recently under the consideration of the Court of Appeal (Hudson *v.* Tabor, 46 *Law Journal Reports*, Q.B., p. 463) has thrown a great deal of light on this point. If there is sufficient evidence to show a liability to repair a sea-wall by prescription, that is to say, if it is clearly proved that the owner of the wall in question has been aware of the claim, and has acquiesced in such claim, then on such evidence he would be bound to keep the wall in repair, and would be liable for any damages caused by his neglect to do so. But very strong evidence will be needed for this purpose, and the mere fact that one man whose property fronts the sea has always kept up the wall, and that his neighbours have got into the habit of relying on his so doing, will not found a prescriptive right by such neighbours to have the wall kept in repair by the frontage owner. As Lord Chief Justice Cockburn remarked,—"The fact that something which a man does for his own benefit may incidentally benefit his neighbour, is not sufficient to warrant the inference that he has bound himself to continue to do the thing in question so as to render him liable in damages if he omits to do it." Therefore it is clear that there is no absolute right existing against a frontage owner to keep up and in proper repair a sea-wall on his property, even though for his own convenience he has long been in the habit of doing so. But then there is the above-mentioned exception, that in some cases it is possible to prove that the owner is liable by prescription. But there can be no doubt that large numbers of persons do fancy, because a landowner has been in the habit of repairing a sea-wall which protects his own and their property, that accordingly they have an absolute right to have it kept by him in a good state of repair. And it is equally plain that landowners and the owners of houses and property in places where sea-walls exist, should clearly ascertain the actual rights and liabilities in regard to such walls, if they are not already under public control, and if there is any doubt about the matter, "the proper remedy," again to quote Sir Alexander Cockburn, "is to procure the issuing of a commission, in which by an equitable adjustment (*i.e.*, of the cost of repair), the interest of all parties may be secured." By so doing grievous and unexpected losses may be easily prevented.

IMITATED ARCHITECTURE.*

ARCHITECTURAL art is one of the grandest and most lasting records of the skill and taste of the age in which it flourishes. When the highest aspiration of architecture is to become the provider of fancy dresses in brick and stone, it is a bad sign of the taste of the age, and of the sense of the architect, and it is also very bad for all the arts which are enrolled in the service of architecture, or of which it is the frame or the setting; but I feel bound to say that I think the fault,—if fault it be,—or the misfortune, is rather with the public than the architect. If they were true, he must be true; if they appreciated and dearly loved beauty, he must provide it; and he has a skill now that has rarely been surpassed. What is dying or is dead is architectural invention and the subsidiary inventions; I mean that sort of invention that is employed in making useful things beautiful. At one time every household utensil was made beautiful to the eye at least of the man who made it, and probably to the eyes of those who used it; but neither the mechanic nor the user thinks of such a thing now, and if perchance the user does, the mechanic refers him to a designer or an architect. Supposing them to be able men, the user may get something that some former age considered beautiful, provided the article was used in former times; but if the thing is new, and the material is also new, both architect and designer will be hopelessly at fault, and the best chance that remains is that the user gets an imitation of something that was once considered beautiful, and of an entirely different material. Take cast-iron, for example. I have seen this beautifully treated as a building material in imitation of old carved wood or of old chiselled bronze, but never beautifully according to its own requirements. But to return from my digression. The architect comes out from the public, must for many years be imbued with the general spirit of his day, and though he may swim against the stream, still he is only behind his fellows: the stream carries them all on together. Do not fancy that the hypocrisy of your age will not be detected by succeeding ones, and if you have no taste for the beautiful, do not pretend to have it, for anything is better than imposture. I think it is a most unhappy thing that the sense of beauty is not developed and cultivated by all; it is the one free gift that nature offers alike to the rich and to the poor. Wherever there is earth, air, and water; sun, moon, and stars; trees, flowers, and grass; men and animals; there is the opportunity of cultivating a taste for beauty of form, of colour, and of expression; but if you will resolutely shut your eyes to these lessons, then let your architecture show the tasteless generation you are.

The copied, imitated, or paraphrased art of another age is not art at all. Art is the expression of the amount of pleasure you can take in things beautiful, and no art at all is a better foundation than a sham one. I believe, too, that Greek simplicity is more akin to the tastes of this age than the coarse complexity of Gothic. I ask of you, when you have anything built, first to have what you want for utility, and for every moulding ask yourself, does this give me more pleasure than a dead wall? If it does not, do not have it. Swift said, "A good style is proper words in proper places," and if you substitute things for words, it is a good architectural style too, but it is not an elegant one. Whatever beauty you have expressed it must be shown wherever *you* can see it. It should be done not to excite envy in your neighbour, but pleasure in yourself. A symmetrical elegantly-proportioned front, delicately moulded and enriched, accompanied by a bare raw back and flanks, with holes for windows put haphazard, does not show your taste, but your ostentation.

If you can get to love the beauty of anything, have that beauty expressed by the sculptor according to the exigencies of the place and the materials; love truth, elegance, and simplicity; and if you love the beauty of any natural object, and can afford it, let the best sculptor you can get carve it on your walls. No matter how small or how limited the bit may be, cram all your spare riches there; and do this, too, where it can be seen. You owe, Mr. Garbett says, your neighbour and the passer-by something for the damage you have done them by depriving them of the light and the prospect, and you pay them back as well as you can for the nature lost by a bit of art.

If you have never admired and appreciated the beauty of any natural object, all ornament is thrown away on you; and if you have any, it will probably be bad; but be it ever so beautiful, its only possible use is to please some educated passer-by who can appreciate it. Country people are always surrounded with the beautiful things of nature; but even the dwellers in towns must have often before them the plant in the pot or the flower in the vase; they must have seen the sparrows on the roof or on the window-sill; the cat on the rug or the gold-fish in the bowl; and if you love the beauty of any of these, let the sculptor carve them on your house.

Do not let me, however, by encouraging truth, encourage the swagger of ignorance. You can know nothing of the simplest art without study, much less can you know of so complex a one as architecture. I want you to feel that you should devote attention to it; not that you should boast that you know and care nothing for architecture, painting, poetry, sculpture, and music.

It is not a reason for boasting, but for shame, that some people are only judges of port wine and blue cotton pocket-handkerchiefs. Architecture is in a most deplorable state; and being the great central art, around which the other visual fine arts cluster, they suffer with it and through it; and the restoration mania greatly helps to keep it in the wrong track, though the fundamental fault of the age is an entire lack of the sense of beauty, or at any rate this sense is so feeble that it will tolerate every form of ugliness in its utensils and surroundings, every form of harshness and discord in the colour of its dress, its rooms, and its hangings. Perhaps this is not very surprising, as the great discoveries in science, the great inventions in machinery, and the great new wants, have habituated mankind to do without beauty; the problem in machinery and in the great engineering works being, not how can such things be made beautiful, but how can they be done at all. Nevertheless, architecture, to be a fine art, must represent the yearning for the beautiful in the living nation, while restoration is turning the attention to what the dead people of other days thought beautiful. The cultivated of to-day think many of their forms ugly, and, whether the forms be beautiful or ugly, they cannot represent our taste. You hear people,—you hear architects,—say what would they have thought beautiful in the thirteenth century, or what would a thirteenth-century architect have done? while the question should be, what do I love, what does my employer love, what does the nation love? Now, though there may be more awe, more grandeur, and more sublimity produced by architecture than by any other visual fine art, yet more interest, more exquisiteness and more touching emotions can be excited in mankind by the arts of the sculptor and the painter. Though our painters and sculptors may fall short of the perfection of the Greeks or of the golden age of Italy, I think the works of the best of them may vie with those of any other period, but their best work will not harmonise with Gothic; so that, in lieu of having your best artists on your best buildings, you must have the work of botchers and daubers, or of men whose "poverty but not their will consents" to do bad imitative work instead of good work of their own.

Under the grand portico* of St. George's Hall (the finest modern Classic building in the world) I hope before I die to see a grand picture in mosaic on a blue ground; and our best artists will not have to hold their hand or give their worst work lest they should spoil the building.

Every epoch (up to the period when architectural art ceased) enlarged or restored its buildings congruously with the best art it had, and in these buildings we can trace the improvement or decadence of the arts. I say congruously, because, looking at such alterations, additions, or furniture, they have mostly been designed so that, in their general outline or mass, they do harmonise with their surroundings, although the main principles of their style, as well as of their details, may be entirely opposed to the style of the building. But in the present day our alterations and restorations are mere forgeries, in which there is not even the best work we can command, and in which there can be no conscious enshrining of our best thoughts, our greatest knowledge, or our highest aspirations.

If a man will tamper with a will he will hardly hesitate about forging a letter; and if you will allow imitation new work to be put in an old building, you will not hesitate to have an imitation house, castle, church, or cathedral built.

The best criticism on the architectural taste and invention of our century is to be found in a topographical dictionary, particularly where the author wishes to be complimentary. "The Town-hall was built in the early part of the century, and is of the Ionic style; the capitals are those of the temple of Ilissus. The gaol is in the Norman style, but executed before the importance of preserving the purity of style and the accuracy of details was felt. The bank is Italian renaissance; the member's house is a Scotch castle, adapted to present exigencies by a conservatory from the turret and a bay window in the curtain. There are three new churches,—one Early English, one Decorated, and one Perpendicular; the cathedral is being restored with the utmost fidelity to the middle period of the thirteenth century; and in the suburbs several villas in the style of Queen Anne are just completed." From these buildings how can any future beholder gather what was the architecture of the nineteenth century?

The satirist who described his hero as,—

> Not one but all mankind's epitome,
> * * * *
> Who, in the course of one revolving moon,
> Was chymist, statesman, fiddler, and buffoon,

did not mean to compliment him. What will the verdict be? The nineteenth century had nothing of its own to say, but it could copy with more or less accuracy the thoughts of all others.

Let me, before I finish, point out another evil engendered by restoration, quite apart from any question of style or art. A house, a castle, a church, or a cathedral built in Gothic times was most admirably adapted to its purpose by some of the most skilful men that ever lived. The cathedral was built mainly for the clergy. It was where they went to church. It was also

* From a paper on "Restoration," by Mr. Geo. Aitchison, B.A., architect, read before the Art Club, Liverpool, and already briefly alluded to.

* The front opposite the Lime-street Station.

for grand public ceremonies. There were the aisles for processions, where the treasures and the relics were shown to the people; there were the chapels, dedicated to special saints, to whom prayers were offered and masses said; there were mortuary chapels, where people prayed, and where masses were said for the souls of the departed; there was the lady-chapel, where special masses were said, and special prayers offered for her intercession; there was the rood-loft, where the crucifixion was represented; and the whole nave was open, so that there might be room for the multitude to fling themselves down on the elevation of the Host; and the whole cathedral was built in a cross form, as a symbol of the faith. Churches were much the same on a smaller scale. Most of the reasons for these forms have passed away, and the cross form, with naves and aisles, is perhaps the very worst form for hearing that could be devised.

Again, castles were to resist sieges as well as sudden attacks, with conveniences for sallying forth, and everything was admirably adapted to the purposes of war in those days; but new ones are simply ridiculous in this peaceful country as dwelling-houses. Every house, too, was adapted to the special wants of its age, which are not the wants of this.

From what I have said, you must have gathered that novelty is the very life of art, because, if it be art, it represents the new knowledge, taste, skill, and aspiration of the generation in which it arises; but it is but a new graft on the old stock. Now our old stock, architecturally speaking, is a dead wall with some holes in it, and you have but to get your architect to make this as graceful, as elegant, and as subtle as he can, your artists to carve or colour it as richly and as profusely as your pocket and your love of the work will admit; but do not let any of them give you copies or paraphrases of what was art two hundred or two thousand years ago; rather have Touchstone's pride, "An ill-favoured thing, sir, but mine own; rich honesty dwells like a miser, sir, in a poor house, as your pearl in your foul oyster."

VENTILATION OF PUBLIC BUILDINGS.

Sir,—On the 16th of March there was a leading article in the *Times* on the ventilation of the Law Courts and other public buildings, and in your paper of the 30th of March are some judicious observations on the *Times* article, in a letter signed "D. O. B.," and pointing out some of the fallacies contained in the *Times* article. With these remarks I entirely agree. But it appears to me that the fallacies in the *Times* article are of so pernicious a tendency that their erroneous character requires to be still more strongly exposed.

There is not a more difficult or complicated question than the proper mode of ventilating public buildings. But the writer in the *Times* states, *ex cathedrâ*, that "it is an exceedingly simple matter as long as the external and the internal temperatures differ to an appreciable degree"; that "nothing is needed but an inlet and an outlet"; that "there can be no doubt that a draught, by carrying away a large amount of bodily heat, often produces catarrhal affections in those who are exposed to it"; that "nearly a century ago it was discovered that *all draught might be prevented* by giving to the entering air a vertical direction, and that this discovery was again brought prominently before the public three or four years since by a gentleman who was thought to have been its originator, until the validity of his patents came to be seriously investigated." We are further informed that "any room can be effectually ventilated by a direct communication with the outer air, and terminating within the room in a vertical tube . . . . and that this air ascends in a compact vertical column until it reaches a height . . . . which may vary from 3 ft. or 4 ft. to 14 ft." By this employment of vertical tubes the ventilation of every room in any ordinary building may be accomplished with the *greatest facility*, and no draught is ever experienced." The article then goes on to describe how, in certain cases, the incoming air, "being colder, and consequently heavier, than that into which it comes, it curls over the mouth of the inlet opening, and falls towards the ground . . . . and in its downward course it is felt as a draught by those who are seated in its track."

The fallacy and contradictory character of these remarks might be safely left to their own refutation, were it not for the importance they obtain by forming a leading article in so powerful a paper as the *Times*; and, further, at the present moment there is so strong a feeling on the subject of ventilating our Law Courts and other public buildings, that the general outcry for something to be done may induce the adoption of any system, however fallacious, provided only that it is pressed with sufficient pertinacity.

Some years since, when the ventilation of the Houses of Parliament was the subject of investigation by Parliamentary Committees, one of the witnesses stated that after an expenditure of 200,000*l.* on the experiments, it appeared to be proved that the best way of ventilating them was by opening the windows! It is to be hoped that the ventilation of the Law Courts may be a little more satisfactory than this, at rather less expense.

The ventilation by vertical tubes, so praised by the writer in the *Times*, was first invented by Mr. Whitehurst, about the year 1784, and was, after his death, described fully in a pamphlet published in the year 1794. The plan appears only to have had a very limited application, and shortly to have fallen into total disuse. It was patented by Mr. Martin Tobin in March, 1873, and has been variously praised and condemned in many quarters. However the plan might have succeeded a hundred years ago, when the requirements, both for public and private buildings, were so utterly different to what they are at the present time, it is perfectly certain that the introduction of *cold air* into the crowded halls, courts, and buildings of the present day is perfectly inadmissible. When it is remembered that such men as Count Rumford, Sir Humphrey Davy, Dr. Desaguliers, Michael Faraday, Marquis Chabannes, and many others almost equally eminent, utterly failed in their experiments on this subject, it is not to be wondered that the matter in question is beset with difficulties. Whatever may be the true solution with regard to our public buildings, it is certain that the plan of Mr. Whitehurst of 1784, and revived in 1873 by Tobin, is not the one that will meet present requirements. The largeness of the openings required for the admission and emission of the air is most imperfectly recognised. It is not quite "so exceedingly simple a matter as long as the external and the internal temperatures differ to an appreciable degree," as the writer in the *Times* imagines. Among the palpable contradictions contained in the article in question, none are more to be condemned that the idea that *cold air* can be introduced in large assemblies of people, requiring oftentimes 10,000 or 20,000 cubic feet *per minute*, without causing such dangerous and life-destroying draughts as to render such plans utterly impracticable. Even with warmed air, if the velocity of extraction and injection be too rapid, owing to the outlets and inlets being too small, the effects produced on those in the line of the draught are not only most unpleasant, but most dangerous. Whenever the air is moved in a room at a greater velocity than about 2 ft. *per second*, a disagreeable draught is certain to be felt. No plan of *spontaneous* extraction of the air can possibly succeed in the large and crowded assemblies of the present day. Artificial means of extraction, either by a *vacuum* or by a *plenum* action, are indispensable. There are many extensive buildings thoroughly ventilated on these principles at the present time; but the difficulty of the case principally arises from the method of ventilation being passed over until a building is nearly completed, and then it becomes almost impossible to form sufficiently large openings and channels for the introduction and extraction of air in sufficient quantities, without causing a most inconveniently rapid motion of the air. No inconsiderable part of the difficulty of the subject arises from treating it, as the writer in the *Times* does, as "an exceedingly simple matter." There is scarcely a more difficult problem in practical science; and the more this view of the subject is realised, the more likely are we to have our public buildings ventilated with some degree of success.

Charles Hood, F.R.S.

Gainsborough.—A new Primitive Methodist Chapel here was formally opened on the 23rd ult. The chapel stands at the junction of Etherington-street with Trinity-street. It is in the Italian style of architecture, capable of seating 1,000 persons, and is built of red stock bricks, with Ancaster stone quoins and dressings, and granite shafts to the front entrance.

DESTRUCTION OF THORNDON HALL, ESSEX, BY FIRE.

Thorndon Hall, the seat of Lord Petre, was destroyed on the 22nd ult. by fire. The mansion was, according to the *Chelmsford Chronicle*, erected in 1766 by Lord Robert Edward Petre, from designs by Paine. The north front consisted of a centre, flanked by two wings, connected by circular corridors, while the south front was relieved by a portico, supported by six fluted Corinthian columns, rising from stout stone arches. The material used in the construction was white brick, with stone dressings. The great feature of the ground floor was the hall, 40 ft. square, the roof supported by eighteen columns cased with marble. On the west side of the hall in the south front was the billiard-room, and to the west of this were the strong room and a library principally devoted to a collection of ancient works, illuminated missals, and the literature of Mediæval days, the servants' apartments and offices taking up the remainder of the ground floor. The central apartment on the first floor in the south front was the saloon, 60 ft. long by 30 ft. broad, which has never been finished. To the west of this were the state or king's rooms, and the remainder of the floor on this front was taken up by his lordship's room and study, her ladyship's room and boudoir, the day nursery, and the armoury. In the north front, on the first floor the boarded hall or ball-room occupied the central position, flanked on the west by the dining-room and cardinals' room, and on the east by two drawing-rooms, the larger one, at the extreme end, being a handsome apartment, 38 ft. by 36 ft., and thoroughly re-decorated only two or three years since at a considerable cost. The second and third floors were devoted to bedrooms and nurseries. The upper apartments were approached by the grand well staircase rising in the centre of the mansion, this being supplemented by other stone staircases. The east wing consisted of the little Roman Catholic chapel in which the household worshipped, and which was most richly decorated. Above the altar-piece was a large painting of the Nativity, by David; the Agony in the Garden, and the Ascension; and on the sides were two little gems, brought from Rome. The western wing formed one of the most extensive blocks of stabling in the country, but the largest stable had been recently transformed into a spacious and handsome skating-rink. A considerable amount had lately been expended in renewing and improving the mansion. In addition to the rehabiliment of the principal drawing-room, the cornice last year was renewed throughout the whole length of the south front, and on the sides, at a cost of some 1,500*l.*, and during the past few weeks the drainage had been improved. Simultaneously with the latter, the old system of heating the hall, corridors, and some of the apartments by means of smoke-flues running through the building had just been partially done away with on account of the inefficiency of the system and the danger of such flues, and had been substituted, as far as regards the hall and staircases, by a complete set of hot-water apparatus. This had been fixed by Mr. T. H. P. Dennis, acting under the direction of the family architect. The boiler for supplying the pipes and the furnace was erected in a small apartment on the ground-floor near the grand staircase, the brick flue from the furnace leading into an old chimney from the armoury at the back of the king's room, and which still stands. The flue from the new furnace, extending about 15 ft. from the furnace-room to its attachment with the old chimney, is all underground, bedded in cement, covered with slabs of stone, and, with the furnace-room, will, it is thought, be found under the *débris* intact. The distance, following the lines of chimney and floor from the point of attachment to the place where the fire was first discovered, is about 30 ft. Coke only was used in the furnace. The new furnace and boiler displaced three furnaces used for heating the old flues on the same principle on which greenhouses are often warmed. These flues warmed the hall, staircases, armoury, and billiard-room. They were all underground, covered with slabs of stone, and in the case of the rooms, outside their respective walls. They were large enough to admit the body of a man, were separated from ends of rafters by only about 9 in. of brickwork, and, as before stated, must have been both ineffectual and dangerous. The old system of heating would still have been

used for the corridors, their respective furnaces being in cellars under the chapel and kitchens. It was also in contemplation to secure a supply of water from the South Essex Waterworks Company, in place of the old system of forcing the water from a well at some distance into a reservoir, but unfortunately that scheme had not been carried out, and the building was, like so many others of its class, lost for want of water. It does not appear that the origin of the fire had any connexion with the new heating apparatus.

NEW BUILDING REGULATIONS FOR GLASGOW.

THE Town Council of Glasgow, at a meeting held on Tuesday in last week, resolved to apply for a provisional order and statutory powers to effect certain alterations and amendments on those sections of their Police Act relating to buildings.

The proposed changes would give additional powers to the Dean of Guild Court, and affect the rights of property in various ways; yet the Council has decided upon their adoption, after about half an hour's discussion, without any of the parties most likely to be affected having had an opportunity of considering them.

Several members of the Council protested against this indecent haste, and pointed out the difficulty of forming a just estimate of the effects of such regulations on various interests without mature consideration; and Mr. Salmon, F.R.I.B.A., entered his protest against the resolution which was adopted. The majority, however, carried matters with a high hand, and rejected even the moderate proposal of Mr. Walls,—"That instructions be given in the meantime to prepare the provisional order, and that that order be submitted to the meeting this day fortnight."

Considering the magnitude and complexity of the interests involved, it is to be hoped that the Government will see it to be its duty to protect the public from such crude and hasty legislation.

BREARLEY, NEAR HALIFAX.

IN transforming the shell of the old Baptist chapel into houses, Mr. Patchett, architect, of Halifax, has introduced an arrangement of his own, whereby the dwellings are rendered better in a sanitary point of view than houses of a similar type are usually made. The partition-walls dividing the tenements are built hollow, having gratings placed at each end in the outer faces of walls, allowing a free circulation of air to be kept up, with the view of stopping sound, as well as the spread of vermin and contagious diseases. The chimney-breasts and fireplace, jambs and backs, are also built hollow, and fresh external air introduced into same, which, after traversing backwards and forwards, is allowed to escape through ornamental gratings fixed in the chimney-breasts, about 6 ft. above the level of flooring, thereby helping to prevent smoky chimneys, and furnishing each apartment with a supply of fresh air, rendered warm in winter by the fires usually kept up for the comfort of the inmates. In addition there is a special foul-air duct provided for each room, and carried up adjoining the smoke-flues, discharging the bad air immediately above the level of the bases of chimney-stacks, but below caps by through slits between smoke-flues. The sinks are disconnected from the drains, the waste-pipes discharging their contents over gratings at the outside of the building, all drain-pipes being on the exterior of the structure. By arranging buildings on these principles little extra cost is incurred at the time of erection, but the occupiers are greatly benefited as to health and comfort.

County Bridges, Essex and Suffolk.—At the Suffolk Quarter Sessions, the county surveyor reported that part of the flooring of Cattawade Bridge had given way at the Essex side. The Essex surveyor had inspected the bridge at both ends, and found the whole flooring very much decayed, there being only ¾ in. thick of sound wood. He proposed that the whole should be covered with Portland cement concrete 9 in. thick. The bridge was 168 ft. long, and supported on 48 timber piles, which had been reduced from 14 in. square to 8 in. square by the action of the water. About 150*l.* had been spent for repairs to the bridge during the last twelve years.

LIST OF WORKS BY THE LATE SIR GEO. GILBERT SCOTT, R.A.

WE are enabled to give the following list, by the courtesy and pains of Mr. George Wood, Sir Gilbert Scott's private secretary. It does not go back beyond 1847, information before that date failing; and it is necessary to note that in some few cases nothing was done beyond a Report, and that Restorations are not distinguished from actual Buildings:—

Cathedrals.—St. Asaph, Aberdeen, Bangor, Chester, Chichester; Christ Church, New Zealand; Canterbury, St. David's, Durham, Ely, Exeter, Edinburgh, Gloucester, Graham's Town, Hereford, Lichfield, Manchester, Norwich (Report), Newfoundland, Oxford (Christ Church), Peterborough, Rochester, Ripon, Salisbury, Sydney (pavements), Wells, Worcester, Winchester.

Abbeys.—St. Alban's, Bath, Crowland, Dorchester, Hartland, Kirkstall, Malvern, Rievaulx, Tewkesbury, Westminster and Chapter-house.

Minster.—Beverley.

Priory Churches.—Brecon, Bridlington.

Churches.—Alford, St. Asaph (parish church), Arundel, Ashburne, Abergavenny, All Saints', Hereford; Anstacy, Aylesbury, Atherstone, Abergwilli, Asfordby, Arksey, Adderbury, Aston Sandford, Adel, Abingdon, Ambleside, Ashley, Algarkirk, Aconbury, Alderney, Aldworth, Acton, Bushey, Barnstaple, Bilton, Buckingham, Bath (Walcot Church), Bowen, Bishopsbourne, Bowes Manor, Beverley (St. Mary's), Bledlow, Belgrave, Brownsover, Brereton, Bradford-on-Avon, Broughton (Banbury), Bilton (Yorks), Branston, Barnsbury (St. Clement's), Bury St. Edmund's, Birstall, Bebington, Beckenham (Mr. Hoare's private chapel), Bournechurch, Buslindge, Bromborough, Bishop Auckland, Brancepeth, Broughton Giffard, Burcott School Chapel, Bridge, Boxmoor, Bingham, Bottesford, Builch-y-Ciban, Berkeley, Bushridge, Barrack School Chapels for H.M.'s Government, Buckley, Cannes (France), Croydon (St. John's), Chester (St. Thomas's), Chillenden, Croudall, Chester (Boughton, St. Paul's), Clapham, Cornway, Colchester (St. Nicholas), Campsall, Clayworth, Coventry (St. John's), Cirencester, Cawood, Churchover, Chetwood, Cleobury Mortimer, Croxton Kerrial, Chesham, Camden, Cheddleton, Croydon (St. Peter's), Cradley, Claydon (Middle), Caverswell, Clifden Hampden, Childwick-green, Camberwell, Cambridge (St. John's), Chetwode, Coventry (St. Michael's), Colney Hatch, Crewe-green, Cornhill (St. Michael's, London), City-road (London), Chesterfield, Chippenham, Cambridge (St. Mary's), Cambridge Cemetery Chapel, Cattistock, Caythorpe, Cobham (Kent), Castock, Cossington, Cottingham, Chiswick, Cambridge (St. Mary's-the-Less), Castle Ashby, Chester (Holy Trinity), Coatham, Calcutta (St. James's), Darlington, Derby (St. Andrew's), St. Deny's (Southampton), Dacre, Dyserth, Dundee (St. Paul's), Dundee (Old Tower parish), Ditton, Dorking, Dover Castle, Doncaster (parish), Danbury, Dudley, Dun's Tew, Dawlish, Dedham, Dowlais, Edinburgh (St. John's), Edgcott, Enville, East Claydon, East Winch, East Markham, Ellesmere, Easly, Edensor, Ealing, Englefield, Edwin Loch, East Woodhay, Ellington, Eversholt, Ely (Holy Trinity), Erivarton, Eccles, Ellington, Frankton, Filleigh, Faversham, Farncombe, Farnborough, Fulney, Feiring (Organ), Fulham (parish), Findon, Flaindon, Forest-gate, Frome (Christ Church), Flisley, Fleet Marston, Fremington, Glasgow (St. Mary's), Gosforth (Newcastle-on-Tyne), Great Horwood, Gloucester (St. James's), Green Hammerton, Godstone, Godalming, Guyhirn, Granborough, Grantham (parish), Glastonbury, Godshill (I.W.), Great Grimsby, Gawcott, Goldsborough, Gazeley, Histon, Houghton Conquest, Hamburg (St. Nicolai), Hull (Holy Trinity), Hanwell, Hartshill, Higham, Hanley (Upton-on-Severn), Hawarden (and Reredos), Hales Owen, Holy Head (St. Cybi), Hayes (Middlesex), Hartshead (Yorks), Halifax (parish), Hardwick (Oxon), Holy Trinity (Micklegate, York), Harrow (parish), Highclere, Hatch Beauchamp, Hampton Lucy, Horndea, Houghton (Hants), Heigham, Hitchin, Hythe, Huckfield, Harrogate, Hedge Hill, Huddersfield, Holbeck, Halstead, Holme, Hampstead, Heple (Hull), Hayley Hill (Halifax), Huntingdon, Hawkhurst, Hereford (St. Peter's), Harewood, Haldenley, Heanor, Hungarton, Highgate, Horstead, Hull (St. Mary's), Iver, Ickleford, Islington, Itchingfield, Icklesham, Jarrow, King's Sutton, Kensington (St. Mary Abbotts), Kirby Moorside, Kirby Hill (organ-case), Kirtlington, Kinver, Kingsley (St. John the Evangelist's), Kelso, Henley, Kirk Hammerton, Kelsey Chapel, Ketton, Kilkhampton, Llywell, Long Marston, Latton, Lynn (St. Nicholas's), Lee (Kent), Lynn (St. Margaret's), Landport (All Saints), Leicester (New St. Saviour's), Loughborough, Ladbroke, Leeds (Hook Memorial), Llangurig, Leominster, Leamington, Hastings, Llanidloes, Lydford (Devon), Leicester (St. Matthew's), Lugwardine, Lutterworth, Lothbury (St. Margaret's, London), Ludlow (parish), Ludlow (St. Nicholas), Latimer, Leafield, Llandough, Lewisham, Leeds (St. John's), Ledbury, Leith, Little Stewkley, Laughton-en-le-Morthen, Leicester (St. Margaret's), Lowdham, Luscombe, Leicester (St. Andrew's), Llan-y-Bettws, Lankton, Little Horsted, Long Buckley, Mirfield, Melton Mowbray, Marston Moretaine, Mold, Mitton-Stourport, Middleton Tyas, Merthyr Tydvil, Mansfield Woodhouse, Malvern Link, Middleton Cheney, Melbourne, Muswell Brook, Newcastle-on-Tyne (St. Nicholas's), Northampton (St. Sepulchre's), Nottingham (St. Mary's), Nocton, Newcastle-under-Lyme (St. Gile's), Newark (parish), Newent, Nantwich, New Romney, Norton (St. Philip's), Northampton (Asylum Chapel), New Brighton, North Aston, Norbiton, Olney, Owston, Oxford (St. Mary's), Orchardlee, Oundel, Oakham, Ottershaw, St. Olave's (Hart-street), Pershore Holy Cross, Pattingham, Patshull, Plymouth (St. Andrew's), Prestbury (Cheshire), Padbury, Pembroke, Petworth, Peterstow, Penshurst, Pitminster, Preston (Sussex), Patrixbourne, Polebrook, Pantrebolas, Penpont, Ryde, Roxeth, Rhyl (St. Thomas's), Rhuddlan, Raunds, Rotherham (parish), Richmond (St. Matthias, Surrey, Rochester (St. Bartholomew's), Ruislip, Ranmore, Richmond (Yorkshire), Rodheath, Shiffnall, Stretton, Selby Abbey Church, Shackleford, Stafford (St. Mary's), Stepney, Southgate, Sudbury, Spalding, Saxby, Stowford, Stafford (St. Chad's), Skirbeck, St. Lawrence (Isle of Wight), Steeple Claydon, Shangai (China), South Weald, Sandwich (St. Bartholomew's), Stratford-on-Avon (Holy Cross), Salhouse, Sawbridgeworth, Sale, Sarratt, Salisbury (St. Edmond's), Stourbridge (chapel, Cambridge), St. Aban's (Wood-street, London), Southampton (Highfield), Silverstone, Shilton, Staveley, St. Ives, Stoke Newington, Sandbach, Swindon (Old town), Swindon (New town), St. Michael's (St. Alban's), Swainswick, St. Alban's (1858), St. Barnabas (Ranmore-common), St. Hilary, St. Sepulchre's (Snowhill), St. Stephen's, St. Alban's, Southgate New Church, Shalstone, Shilton, Skipton (tombs, Duke of Devonshire), Streatham, Spalding (Old church), Shapwick, Stoke Talmage, Stroud (parish), Sherborne, Temple Balsall, Totnes, Tandridge, Twickenham, Timsbury, Thriplow, Tadcaster, Tavistock, Taplow, Trefnant, Trentfall, Turnham-green, Theddingworth, Tedstone Delamere, Taunton (St. Mary's), Tydd St. Giles, Taunton (St. John's), Twistleton, Traherne (Mistress, restoration of church), Upton, Uxbridge (New), Uxbridge (parish), Under-river, Upnor, Upton Bishop, Worcester (New), Whitnash, Wirksworth, Whixley, Wakefield (parish), Winterton, Wraste, Warmington, Woodbastwick, Watermoor, Westminster (St. Margaret's and St. Matthew's), Warlingham, Wye (Kent), Wingrave, Waltham (Little), Wellford, Wingham, Wilburton, Windsor (Chapel Royal, and Wolsey Chapel), West Meon, Whittlebury, Wolverton, Worsley, Wilmerton, Windsor (Horse-shoe Cloisters), West Ham, Weston-super-Mare, Worldham, West Drayton, Woking, Wimbledon, Windsor (parish), Woolwich Dockyard Chapel, Wescott, West Derby, Wakefield (Chapel on bridge), Westminster (St. Peter's), Wembly (St. John's), Wakefield Asylum Chapel, Wanstead (Christ Church), Whittlesey, Woolverstone, Welton, Welshampton, Weston (St. Mary's), Woodhay (East), West Walcot, Yewsley, Ylvesley (New), Yarpule.

Schools.—Ardrossan, Dorchester, Green Hammerton, Hayes, Harrow, Fulney, Oxford Divinity, Burcott (Chapel), Nocton, Southampton, Sudeley, Doncaster, Ashley, Forest Gate, Hartshill, Peterborough, Rugby (and Masters' Houses), Swindon (and Houses), Streatham, Middleton Tyas, Trefnant, Stafford, Lyndhurst, Glastonbury, Tothill-street (Westminster), Burton Abbotts.

Almshouses, &c. — Godstone, Sudeley, Blackfriars, Croydon, Stafford Asylum.

Parsonages.—Great Bricet, Hayes, Hillesden, Houghton Rectory; Derby (St. Andrew's), Bowes Manor, Fulney, Hull (St. Mary's), Staveley, Mirfield, Ashley, Clifden Hampden, Bridge, Ealing, Leafield, Leicester, Hartshill, Stoke Newiogton, Trefnant, Kilkhampton, St. Andrew's, (Leicester), Leith.

Monumental Works.—Albert Memorial, Earl of Aberdeen's Bust, Countess of Loudoun's Memorial at Ashby-de-la-Zouch, Hook Memorial Pulpit and Tomb, Chichester; Hook Memorial Tomb, Leeds; Lady Lucy Calvert's Memorial Cross, Mortuary Chapel, Chichester (Jervoise Smith, esq.); Bishop of Brechin's Memorial, Dundee; Dean Howard's Monument; Memorial Cross, St. Mary's Cathedral, Edinburgh; Monuments for Sir William Fraser and Mr. Freshfield; Bishop Hamilton's Monument, Mrs. Kaye's Monument, Lonsdale's Memorial, Lord Lyttelton's Tomb, Van de Weyer's Tomb, Archdeacon Moore's Monument, Scarsdale's (Lady) Memorial, Prince Albert's Tomb, Wolsey Chapel; Wilberforce Memorials (several); Wilberforce Tomb, Winchester Cathedral; Rotherham Monument (Mr. Yates's); Clarkson Memorial, Wisbeach; Green Memorial, Penshurst; Bird's Monument, Mrs. Bradshaw's Monument, Professor Conington's Monument, the Countess of Exeter's Tomb, the Hon. and Rev. Mr. Fienne's Tablet, Hereford Tomb, Colonel Pease's Mortuary Chapel, Colonel King's Monument, Keble Memorial, Professor Maurice's Memorial, Mrs. Mainwaring's Monument; St. Neot's Monument (G. O. Newton, esq.); Toulmin Tomb, Stephens Memorial, Edwards Memorial, Franklin Memorial, Monument to late Dean of Ripon, Penmaenmawr; Martyrs' Memorial, Oxford; Reading Gaol and Abbey Gateway; Westminster Crimean Memorial; Elgin Tomb, Calcutta; Lady Canning's Tomb, Waterford Memorial; Winchester Cross; 30th Regiment Tomb, Ely Cathedral; Major Otway Mayne's Monument, Mrs. Schuster's Tomb, Colonel Fairleigh's Monument, Godley Memorial, Harrow; Mrs. Johnson's Tomb, Sir H. Smith's Memorial, Southam Monument, Hon. E. Twistleton's Monument.

College Chapels.—Cambridge (King's College, St. John's College, and University Chapel), Exeter, King's College (London), Harrow, Oxford (All Souls' College, New College, and Magdalene College; Wellington College.

Colleges.—Dorchester Training, Wellington, Magdalene (Oxford), New College (Oxford), Edinburgh Theological, Brighton, King's (Cambridge), Merton (Hall and Library), Oxford Convocation House, Cambridge University Library, Exeter, Peterborough, Partis, Oxford University Library, Worcester (Oxford), Bodleian Library (Oxford).

Public Buildings.—Home and Colonial Offices, India Office (jointly), Midland Station and Hotel, Leeds Bank, Lincoln's Inn Library Extension, Lincoln's Inn New Chambers, Helmsley Market Hall, Glasgow University, Bute Hall, Worcester Guildhall, Brill's Brighton Baths, Albert Institute, Dundee, Derby Masonic Hall, Radcliffe Infirmary at Oxford, Preston Town Hall, Bombay Great Hall and University (India), Leeds Infirmary, Preston Markets, Halifax Public Buildings, Savernake Cottage Hospital, Billericay Union, Belper Union, Dunmow Union, Lewes Library, Newcastle Assize Courts, Harrow Library, St. Alban's Dispensary.

Mansions.—Ashbridge (Earl Brownlow's), Flixton Hall, Kellam Hall, Horton Manor, Grosvenor Houses (Mr. Newton's, Mr. Fenwick's, and Mr. Manners Tatton's), Milton Abbey, Mr. Leather's house (Liverpool), Mr. Marriott's house (Staveley Hall), Mr. Southall's house (Worcester), Walton Hall (Warwickshire), Luton Hoo, Llanhydrock, Canon Swayne's house (Salisbury), mansion at Yarm, Dunsany Castle, Duncombe Park, Prudell Court, Colchester Castle, Hafodemes, Broughton Castle, Holdenby (Lady Clifden), Artington House, Alten Manor House, Belper House, the Professors' houses (Glasgow University), Leigh Priory House, Mitton Hill House, Pippbrook House; Sir Francis Scott's Lodge, bridge, and boat-house; Wootton House, Westminster houses (Broad Sanctuary and Abbey Precincts), Kingston Grange, Polwhele House, Sudeley Castle, Trevellyn Veau, numerous houses for Canons of Westminster (Dean's-yard), St. John's Lodge (Cambridge), Sir E. Antrobus (Westminster House), Caton Hall (Lodge), Capesthorne Hall, Scott's Hall and Smeeth, Weston House.

Sundries.—Brighton, Pulpit; Coventry, Reredos; Cobham (Kent) Reredos; St. Alban's, Fountain, Clock Tower, and Abbey Gateway; Dundee, Albert Fountain; Eccleshall, Cross, Hereford, Cross; Shipton, Reredos; Bombay, Fountain; Levesdon, Reredos; Hull, Fountain

Royal Birmingham Society of Artists. The Spring Exhibition of this Society is now open. Nearly a thousand works are on view, many of them by artists of repute.

PORTLAND CEMENT AND TEMPERATURE.

THE extended use of Portland cement in many countries since its first production in England has led to the institution of many important experiments. A paper on "The Use and Testing of Portland Cement," by Mr. W. W. Maclay, C.E., submitted to the American Society of Civil Engineers, occupies a whole part of their "Transactions." The experiments are tabulated. We condense a portion of it.

One series of experiments is intended to illustrate the effect of mixing up Portland cement, both neat and gauged with two volumes of sand, in extremely cold weather; also, under the same conditions, the effect of heating the cement, sand, and water, in order to hasten the setting. The results deduced from these tables are clearly marked, and some of them are quite at variance with prevailing ideas among the profession. They show, almost indisputably, the very injurious effects of heating mortar in cold weather (under the false impression that the setting of the cement is thereby accelerated), and that the greatest amount of evil is accomplished when this heated mortar is immersed directly in cold water. They also show how comparatively little the strength of Portland cement mortar is injured by being mixed up in extremely cold weather, provided the materials are not heated. All of the tests from which these tables have been formed were made of Burham cement, tensile strength, neat, seven days old, 278 lb. per square inch; weight, per struck bushel, 119 lb., and containing not more than 15 per cent. of particles over $\frac{1}{50}$ in. in diameter. In order to have the conditions as nearly as possible the same, two sets of briquettes were generally made at the same temperature, in the open air,—one in which the mortar or cement paste averaged about 40°, and the other in which the cement, water, and sand were heated up to 100°. These two sets were kept in precisely the same manner, and broken together on the same day, so that any change in temperature during the seven days would necessarily affect them alike. As soon as the cement had set sufficiently to allow removal from the moulds, part of the briquettes were placed at once in the North River, temperature from 31° to 33°; part of them were left out of doors, exposed to the action of the weather; part immersed in water, maintained at 70°, during the seven days; and the remainder were kept in air, maintained at 70°, during the same time. The averages show that of the briquettes mixed up cold, the tensile strength was the least with those exposed during the seven days to a heated atmosphere, and that it was the most with those immersed in heated water during the same time.

The results of placing the briquettes in the cold river-water, and of exposing them in air outside during six days to the action of the weather, were about the same.

The briquettes of pure cement made by heating the materials until the cement paste stood from 96° to 98°, with the temperature of the air in which they were mixed varying between 13° and 19°, and being exposed for six days to the action of the weather, only proved to be from 7 per cent. to 16 per cent. as strong as when they were mixed up without heating, or with the temperature of the mortar at 40°. When the air in which the cement paste was gauged varied from 32° to 37°, the briquettes made with hot materials proved to be 20 per cent. as strong as the cold, and when the temperature of the cement paste of the heated briquettes was only brought up to 70° instead of 96°, they reached 72 per cent. of the tensile strength attained by the cold ones.

When, instead of gauging the cement neat, two volumes of sand were added, with briquettes made under the same conditions as the preceding, the tensile strength per square inch, at the end of twenty-eight days, in those in which the mortar had been heated to 98°, only attained 30 per cent. of the strength shown by the briquettes made from cold mortar, which in this series of experiments stood at 40°.

In all these comparative experiments as to the merits of heating the materials in cold weather, whenever the briquettes made from hot mortar or cement paste were immersed in either cold water from the river or in warm water in the testing-room, they invariably dissolved into shapeless lumps, which subsequently set in a partial manner, although, from having lost their shape, it was never possible to break them in the testing-machine, and so compare their strength directly with that of briquettes made from cold materials. However, by breaking lumps into pieces with a hammer, at the end of five or six months, their value was found to be scarcely anything as compared with the briquettes made up cold. From this we should conclude that, while mixing the mortar up hot, for use above water, in extremely low temperatures, greatly reduces its normal strength, to immerse it directly in cold water under these conditions is to destroy its value almost entirely.

Calling 100 the tensile strength per square inch of the briquettes, gauged with neat cement, and with two volumes of sand, and mixed up cold, in temperatures from 13° to 22°, for mortars heated to 98°, the briquettes, at the end of seven days, rarely exceeded 10, or at the end of three months, 30. These per-centages are deduced from averages from a large number of experiments. In the same manner, calling 100 the tensile strength per square inch of briquettes gauged neat and mixed up cold, in temperatures from 32° to 37°, when heated to 70° the value of the briquettes fell to 72; when heated to 100°, their value became 20.

Having given the percentage of injury done by the heating of Portland cement mortars, intended for work above water, when mixed up in temperatures varying from 13° to 37°, taking the strength of cold mortar, put in under the same conditions, as 100; in order to make the comparison complete, it only remains to give the values of cements mixed up, without heating, from 13° to 70°, which may be summarised by saying that the effect of mixing up mortar in temperatures varying from 32° to 37°, is to reduce the tensile strength at the end of seven days, which they would have had mixed up in a temperature of 70°, by about four per cent.; to mix them up in temperatures varying from 13° to 22° is to make this reduction about 14 per cent., and for any of the intermediate temperatures, between 70°, 32°, and 13°, the reduction would vary between 0—4 and 14 per cent. The above figures are deduced almost entirely from seven-day tests, and their relative values have been found to hold good, with slight variations, up to an age of three months. For longer periods the briquettes have not yet been broken.

This series of experiments was commenced (1876-1877) while the writer was building a concrete arch, the piers of which were situated in a rapid tideway, and had been built up to low-water mark. It was feared that if the work was not continued, the centering would be carried away by the ice, immense fields of which were daily coming in contact with the piers. The question arose, should the concrete, which was made of Portland cement, be put into the work hot, and should it be put in at all during exceptionally low temperatures? It was decided that the concrete intended for under-water work should be put in cold; above water, hot; and that the work should be carried on whenever the concrete could be mixed up without freezing on the shovels of the concrete-mixers. Concrete (by volume one part cement, two parts sand, and four parts broken stone) was frequently put in the work when the temperature of the air was 25°, to be submerged by the tide after the lapse of an hour or two, the temperature of the salt river water being 31°. When the work was exposed at the next tide, the concrete was found in good condition. In the same manner, above the action of the tides, concrete was frequently mixed up and put in the work, with the thermometer standing at 25°, and upon one occasion when the day's work terminated the thermometer stood at 23°. Granite was also set under the same conditions, and levels taken upon it the ensuing spring showed no settlement.

In the commencement of the winter the concrete above the tide was heated. For this purpose portable furnaces or heaters were used for the stone and sand, and steam for the water. This practice only continued a short time, however; for, as the experiments with the hot and cold briquettes progressed, the surprising superiority of the cold mortar was so clearly shown that the heating was at once abandoned, except to thaw the frost out of the stone and sand, which were frozen so hard during the nights as to be unfit for use in the morning when the work commenced without heating them. The concrete which had been put in hot was very carefully examined when the weather was sufficiently warm, by cutting test-holes several feet deep into the mass, exposing the layers that had been put in under the two systems—hot and cold. Very little difference could be detected by this examination: the concrete which had been put in hot in very cold weather being apparently as hard and difficult to cut out as that which had been put in cold. The writer accounts for this apparent non-confirmation of the experiments by actual practice by the following explanation:—The concrete made by heating stone, sand, and cement, separately, from a scarcity of heating apparatus, never rose in temperature much above 50°, which in air at 25° appeared much hotter than it really was. Heated, therefore, to 50°, the concrete was but very little weakened; for, as it has been shown in discussing this table, with the temperature of the air at 32°, and the mortar at 40°, 70°, and 100°, the tensile strengths stand 100, 72, and 20. In other words, this weakening would not be discovered by any examination except that of breaking the specimens in a testing-machine. Fortunately, none of the concrete submerged by the tides was put in hot; for, as it has been previously stated, this is the most unfavourable condition under which Portland cement-mortar can be prepared in cold weather. This fact seems to be but little known among the profession, and by some of our engineers has been entirely ignored in their practice. From the experiments on this subject, it seems very conclusively shown that no good work can be done under water in winter if the mortar is heated; and where such work has been done, if subjected to careful examination, signs of failure will probably be detected.

In the above experiments, all the briquettes of mortar mixed up cold seemed to set, and not to freeze even in as low temperatures as 13° and 14°, except when the day was windy. With the briquettes made of hot mortar, on the contrary, they all invariably froze, as was proven by their getting soft again whenever the temperature rose. This fact probably accounts for the hot briquettes, when placed in water, always dissolving: its higher temperature causing them first to become soft and then to separate. The peculiarity of Portland cement setting in a low temperature, in which another cement would freeze, has been noticed by most writers on Portland cement, but no limits assigned to this action. M. Ed. Leblanc, in a note written in Boulogne in 1865, says, "Among the number of remarkable properties of Portland mortar, it is necessary to notice that of not being destroyed by the frost. 'Portland mortar does not freeze,' our masons say; which permits the execution of Portland masonry works in the latter part of autumn, and even in winter in urgent cases. Thus cakes of Portland mortar that we have exposed to the frost immediately after they were made, before they set, cracked deeply and in part became disintegrated; but the detached fragments after they thawed, even to the smallest, were found perfectly hard."

Part of this experience of M. Leblanc is different from that of Mr. Maclay; for none of the briquettes, mixed up cold, cracked in the slightest degree when exposed to the lowest temperature, which, in some of the above experiments, went down to 11°. That the mortar should become hard after thawing is, however, in complete accord with the results deduced from the experiments, and also with the prevailing opinions upon this point; for example, Mr. J. Dutton Steele, in a recent note published in the correspondence of the Society, says, "Cement mortar is not seriously impaired by being laid in frost, as its property of setting is simply held in suspense during the time it remains frozen." This is true with Portland cement mortar, as with all other mortars; only, with Portland cement it takes a very much lower temperature to freeze it.

The Charities of Dowgate Ward.—Mr. George Mitchell, who occupies premises in this ward, has published a list of the numerous charities which belong to it, and says, "as the natural increment of this property must have made it a hundred times as valuable as when it was bequeathed to the poor, there must be either enormous sums of money given away yearly to the Dowgate poor, or there must be a considerable amount of property in private hands, which does not yield its fair quota to the legitimate recipients." He asks pertinently, "Who are the favoured individuals in possession of house-property belonging to these charities at a peppercorn rent; who let the property to them, and under what circumstances?" Some of the officers of the ward should answer these questions.

THE DETERIORATION OF OIL PAINTINGS.

DR. R. LIEBREICH took this as the subject of a recent Friday evening's discourse by him at the Royal Institution. Oil paintings, he said, are subject to various kinds of changes, which may be considered as diseases, requiring different treatment according to their different nature. A science needs to be formed,—a pathology and therapeutics of oil paintings. The pathology would have to describe those diseases and their progress, and to develop the methods by which a correct diagnosis could be arrived at in each individual case. The therapeutics would teach the remedies which might be applied either to cure or alleviate the disease, or at least stop its progress. A hygiene would follow which would have to teach how to avoid pernicious influences, and which, besides, while giving precepts for the technical process of painting, would have to forestall those constitutional diseases which, even in cases where no noxious influences can be traced, are the causes of decay after a comparatively short period of existence. As medical science is, above all things, based on anatomy and physiology, so the exact knowledge of the structure of a picture would have to be acquired previously to any study of its disease. Unfortunately direct investigation alone can procure no such exact knowledge; on the contrary, we are obliged to enter upon a minute historical investigation of the material as well as of the technical methods adopted by artists of different schools and different periods. The excellent works of Cennino Cennini, Mérimé, Sir Charles Eastlake, Mrs. Merryfield, and others, have already furnished most valuable material; but still the field for investigation remains unlimited, for in order to enable us to secure the conservation of each valuable painting, we ought to know exactly how it was made. The artists of the present time would spare infinite trouble to the investigators of future times if, along with their works, they would leave the account of their practice in the case of each picture. A treatment without exact knowledge of the normal condition as well as of the nature of the disease is as dangerous for the picture as it would be in the case of living beings. In studying this subject, we have to consider—first, the material on which the artist has painted, which, so far as oil-painting is concerned, is generally wood or canvas; secondly, the priming, that is, the substance with which the surface was prepared in order to make it fit for painting; thirdly, the painting itself, that is, the pigments and vehicles used for it, and the liquids that were added during the painting, the mediums, the siccatives, varnish, essential oils, &c.; fourthly, the coat or coats of varnish spread over the picture. Firstly, the wood on which a picture is painted may either warp, get chinks in it, become worm-eaten, or even altogether rotten. The remedies for these Dr. Liebreich described. Canvas may be subject to holes, rents, or the whole may be ragged and tattered. The remedies in such cases are either patching, or the entire removal of the old canvas, and the substitution of fresh. Secondly, the changes in the priming may be grouped under two heads — the distemper and the oil priming. The diseases arise either from cracks in the priming itself, the severance of the priming from the painting, or the severance of the priming from the wood or canvas. The third disease is by far the most frequent. Thirdly, the painting itself. It is often supposed that the old masters were in possession of pigments the knowledge of which has been lost, and that this accounts principally for the difference between the oil-painting of the fifteenth and sixteenth centuries on the one hand, and that of the eighteenth and nineteenth on the other; but this is a great mistake. We know perfectly well the pigments used by the old masters; we possess the same, and a considerable number of new ones, good as well as bad, in addition—good and bad, that is, as regards durability. From this point of view pigments may be grouped under three headings:—1. Those which are durable in themselves and also agree well with the other pigments with which they have been mixed. 2. Such as, when sufficiently isolated, remain unaltered, but when in contact with certain other pigments change colour, or alter the others, or produce a reciprocal modification. 3. Those which are so little durable that, even when isolated from other pigments, the mere contact of the vehicle, the air, or the light, makes them in time fade, darken, or disappear altogether. The old masters used without reserve only those belonging to the first of these categories. For those belonging to the second they imposed on themselves certain limits and precautions. Those belonging to the third they did not use at all. That some of the modern masters have not followed these principles is not owing to a lost secret, but to the fact that they disregarded those well-known principles, and even consciously acted against them. It seems pretty certain, however, that the pigments themselves play only a subordinate part in the deterioration of oil-paintings, and that the principal part belongs to the vehicle with which the colours are ground. Reference was made to a table given by Pettenkofer of the relative amount of oil different pigments require. They vary from white lead, of which 100 parts require 12 parts of oil, to raw terra sienna, which requires 240 parts. The principal enemy of oil-painting is oil. The old masters made their apprentices spend three years in learning how to mix. After a reference to several pictures in which the different effects of oil may be studied, Dr. Liebreich suggested the following rules:—1. The oil should in all colours be reduced to a minimum, and under no form should more of it than is absolutely necessary be introduced into a picture. 2. All transparent colours which dry very slowly should not be ground with oil at all, but with a resinous vehicle. 3. No colours should be put on any part of a picture which is not yet perfectly dry. 4. White and other quick-drying opaque colours may be put on thickly. On the contrary, transparent and slowly-drying colours should be always put on in thin layers. Lastly, the varnish, the last layer of the picture, often cracks, or may be discoloured, and it is then necessary to remove it. Numberless works of art have been irreparably injured by restorers, who in their eagerness to remove dirt and varnish have attacked the picture itself.

NEW BUILDING FOR THE NORFOLK AND NORWICH HOSPITAL.

AT a special meeting of the governors of the Norfolk and Norwich Hospital, on the 23rd ult., the Building Committee presented a report, from which we cull the following passages:—

"At a meeting held 7th July, 1877, the General Board, adopting the recommendation of the Building Committee, appointed Messrs. Wyatt & Boardman architects for the proposed new hospital.

At a meeting of the Building Committee, held October 13th, 1877, instructions were given to the architects to prepare alternative plans (A and B) adopting in both the H form of general arrangement, but showing in A the adaptation of the east wing of the present hospital to the purpose of an out-patients' department and nurses' institute, and interposing the administrative department between it and the hospital proper; and in B, providing accommodation for nurses in a detached building, to be erected at the east angle of the site, and placing the entire administration with the out-patients' department in the centre of the space between the limbs of the H.

At a meeting held 1st December, plans A and B, in accordance with these instructions, were submitted, and approximate estimates were furnished by the architects as follow:—Plan A, preserving the east wing of the present hospital, 36,000*l.*; plan B, involving the total demolition of existing buildings, 37,900*l.*—to which the architects desired to add for contingencies in either case at least 1,500*l.*

After lengthened discussion, at a meeting held on the 8th December, the committee decided by a majority in favour of recommending plan B to the Board of Governors, but inasmuch as considerable difference of opinion had been manifested, and the vote in favour of plan B had not been carried by a majority of the entire committee, it was felt that further opportunity of testing the relative merits of the plans might with advantage be given, and the committee resolved to call in Dr. F. de Chaumont, Professor of Hygiene at the Army Medical School, Netley, to inspect the plans and site, and furnish a report which it was hoped might be conclusive.

Professor de Chaumont having undertaken this duty, and expressed in an elaborate report his preference for plan B, the committee passed a resolution confirming their previous vote in favour of that plan, and in pursuance of the resolution so confirmed now beg to submit plan B, with Dr. de Chaumont's report in illustration of its merits, for the consideration of the General Board."

Plan B is in the Italian style of architecture, to be built of red brick, with stone dressings; is arranged upon the pavilion system, and consists of four main blocks of buildings, viz., two double pavilions, administrative and operating blocks. The pavilions are two stories high, and set out on the site at right angles with St. Stephen's-road. The south-west pavilion consists of four large wards, each containing twenty-four beds, and each having a "double-bed" ward and nurses' room, with detached projections at each extreme angle, containing bath and lavatory accommodation. The north-east pavilion is of a similar construction, but contains more smaller wards. These pavilions are connected with the administrative block by a corridor, 12 ft. wide. The administrative block is placed centrally between the two pavilions, with a façade of 94 ft., and has a *porte cochère* to the central main entrance, and a clock-tower rising from the central roof, and consists of a basement, containing kitchen, scullery, and store-rooms, with corridor to the pavilions, arranged with lifts for raising coals, &c. The ground-floor contains entrance-hall, library, Board-room, secretary and matron's rooms, &c., and completely separated by a wall is the out-patients' waiting-room, with surgery, physicians' and surgeons' rooms, and entrance and exit perfectly distinct from the hospital. This waiting-room will also be used for patients' visitors. At the end of this waiting-room is the dispensary, which is to supply the out-patients, and is equally distant from all the wards. The first and second stories contain the resident officer's sitting and bed rooms. In the rear of this is the operating-block, one story high, containing theatre, consulting-rooms, four double-bed wards, nurses' accommodation, baths, &c. Between the operating-block and the pavilions is a general bath-room on one side, and a nurses' dining-room on the other. At the north-eastern extremity of the corridor is the chapel, and beyond that the museum and *post-mortem* and waiting rooms. Detached from the hospital, and forming the north-east building, is a residence for nurses off duty, covered shed for carriages, &c.

The recommendation of the building committee is still under discussion. Party feeling between the adherents of the respective plans seems to run in strong currents, judging from a report, several columns in length, in the *Norfolk Chronicle*. The hope was expressed by Sir F. G. M. Boileau that at the next meeting the alternative elevation of plan B,—the Queen Anne elevation,—would be placed before the governors.

BRICKBURNING BY A NEW PROCESS.

MESSRS. J. & C. J. FOSTER, of Normanton, Yorkshire, are the patentees of a kiln for burning bricks, suitably called "The New Patent Tramway Brick-kiln." The kiln, in appearance, very much resembles a brick tunnel above ground; it is 108 ft. long, 8 ft. wide at the bottom, and measures, in the centre of the arched top, about 11 ft. in height; near to the entrance-end is the chimney-shaft, and the furnaces, of which there are four on either side, are midway between the inlet and outlet ends of the kiln. At the mouth or entrance end is an iron slide fitted into grooves, which is elevated and lowered as the load of "green bricks" is admitted, and a pair of iron folding-doors at the outlet end. The tramway is formed of two lines of ordinary railway metals, with the same gauge as is used on railways, and passes through the kiln and extends beyond it at both ends, and a loop line outside for the trucks to pass to the entrance end when discharged. The truck upon which 5,000 green bricks are stacked is 12 ft. long and 8 ft. wide, and the load when stacked is shaped to correspond with and fit the inside of the kiln; each truck consists of four wheels and an iron bottom with a covering of fire-clay. On either side of the kiln is a fillet ingeniously contrived so as to fit a groove formed on the outer sides of the bottom of the truck; by this arrangement cold air is admitted under the bottom, thus preventing the iron from damage by the heat, and preventing cold air from entering the inside of the kiln. The ends of the trucks are rabbeted, so that one truck-bottom overlaps the other about 3 in.; and when the kiln is full, forms a continuous air-tight floor, having nine divisions coupled together extending from one end of the kiln to the other, each truck or load consisting of 5,000 bricks, the total number in a kiln of this size being 45,000. The heat passes from the furnaces in the middle to the inlet end, thus five truck-loads of bricks are more or less brought into contact with the heat, the load immediately opposite the furnaces being the hottest; in fact, the bricks as seen through the furnace-holes are at a red or white heat, whilst the load of green bricks last admitted is only gradually drying; also, the truck-load which has passed the furnaces is gradually cooling, and gets colder as it passes towards the outlet. Each truck-load is retained from six to eight hours opposite the furnaces, and for the same period of time is either passing the stages of increasing heat or cold as it approaches towards or passes from

the furnaces. It therefore follows that one load of 5,000 bricks is admitted and 5,000 withdrawn every six or eight hours, and from 15,000 to 20,000 bricks are burned in every twenty-four hours.

ST. LEONARD'S.

WITH reference to the concluding paragraph in our article last week on the Jubilee of St. Leonard's, we are asked to say that the municipal authorities, through their surveyor, are engaged in extending that system of sea defence which has been mainly instrumental during many years past, in defining the boundaries of sea and dry land in the borough; and that, while the new Parade wall affords at once a stout bulwark and a fine promenade, additional groynes may reasonably be expected to be the medium of collecting at the extreme east a like amount of beach to that they have been the means of providing towards the west end of that modern creation of which we wrote.

"GYMNASTIC EXERCISES."

SIR,—I read with interest your article in last week's number on "Ancient and Modern Gymnastic Exercises," containing much that is suggestive and true, and quite in keeping with the objects of a journal which is concerned in all questions relating to health.

But I regretted to read a sentence, in reference to the development of the voice, casting a slur on those who would "teach their children that it is vulgar to speak loud," &c. I am most strongly of the opinion that nothing in manner is more pleasing, and more indicative of really gentlemanly character and bringing up, than a quiet and restrained manner of speaking; "an excellent thing in woman," our great poet says; an equally excellent thing in man, I venture to suggest; and a habitude which children will not acquire, perhaps, unless inured to it early. When I hear children noisy and speaking with loud and sharp voices, I always set them down as badly brought up. The quiet voice is an old tradition of "the gentle life" in this country, and one that is now only too much neglected and undervalued. Z.

THE COST OF THE MANCHESTER JOINERS' STRIKE.

A FEW days since, the united trade committee of the Manchester and Salford Carpenters and Joiners' Association issued a report, in which they state (according to the *Manchester Courier*) that it is with extreme regret they are again compelled to report the strike in Manchester and Salford still unsettled; but they are happy to add that many more favourable signs of success appear than have been apparent for several months past. On the 4th ult. a general meeting of the trade, which was attended by nearly 2,000 members, was held, and after hearing the report of the committee, it was unanimously decided to continue the demand of the associated builders until they are prepared to meet the committee of the workmen, sign the rules, and make a reasonable concession in respect to wages. The committee was also empowered to make terms with the unassociated builders by permitting them to employ men at 9d. per hour, on condition that they gave their concurrence in the improved working rules agreed to twelve months ago. Accordingly the committee have visited, either personally or by proxy, nearly 200 employers, all of whom have agreed to the new arrangement. In every instance the men not connected with the union have been discharged before the society men resumed work. The committee are in negotiation with several other employers, and have great faith in the results of the new movement, which had given the most unqualified satisfaction to all their best friends in the trade. Its success was, perhaps, proved by the following figures:—In the week ending March 9th, there were on strike 468 men connected with the general union, and 425 men connected with the amalgamated society, total 893; and on the following week the figures were respectively 436 and 388, showing a decrease of sixty-nine society men; and the numbers of the non-society men connected with the associations also show a decrease in equal proportion. The committee expected a much larger decrease during the current and following weeks until the end of the strike. The report concludes as follows:—

"Surely when the employers see their members and friends seceding from them in this manner, and obtaining the next summer's contracts, which under other circumstances would belong to them, they must open their eyes and throw off the stupid dogmatism with which they have previously received all our overtures, and meet us with a reasonable concession, and thereby put an end to the struggle which has proved more disastrous and costly to them than it could possibly be to us."

In the eighth balance-sheet the committee state that 311*l.* 9s. have been received in subscriptions in aid of the strike fund from other trades; 5,787*l.* 5s. 3d. from their fellow-tradesmen in other towns, and 5,800*l.* 19s. 11d. in the form of local levies subscribed by members of the associations who are at work in Manchester and neighbourhood. The total expenditure had been 11,863*l.* 8s. 8½d., leaving a balance in hand of 36*l.* 5s. 5½d.

A STRIKE AND ITS RESULT.

SIR,—It seems that the masons' strike has come to an end. It will increase the present ill-feeling existing between labour and capital, unless some centripetal force be put in action to harmonise the contending parties.

Some time since Professor Barry urged the working men and the trade societies to the erection of houses suitable to their requirements. Mr. T. Brassey, M.P., has also written in favour of co-operation, since which time one of the Messrs. Lucas has spoken in favour of the same organisation. On the side of labour, Lloyd Jones & Co. are co-operators. Were it possible to establish a manufacturing co-operative society, with some of those individuals on the committee proposing to pay 6 per cent. on transferable shares, both classes would feel an interest in its success. To the manufacturer the committee would act as a buffer, lessening the shock of contact, and possibly forming a kind of Conciliation Board. The high interest proposed as a first charge might attract capital, and the bonus on labour might attract the workman. Were the experiment tried on a small scale it might be best, and a good and national object would be the erection of a temperance hotel, with lecture-room, baths, and stabling attached. At Aldershott each of those things is needed at that central depôt, for our soldiery and the visitors at the camp, as nothing of the kind exists at the present time. The advocates of total abstinence might also aid if they found others willing to help. J. CHRETIEN.

CHANGES IN IRON.

SIR,—It is a well-known fact that the very best puddled iron becomes granulated after a long series of blows or shocks. The fibrous nature becomes crystalline and brittle. A Birmingham manufacturer, who uses a large number of small steam-hammers, tells me that he found the very best iron, when used as piston-rods to his hammers, became granulated and broke after being in use about two months. The damage and loss consequent upon the breakage was very serious. This he now obviates by annealing his rods every six weeks or thereabouts, which he says restores their fibrous character.

We have always been taught by scientists that the crystalline character of cast-iron and steel was due to a percentage of carbon in combination with the iron; but in the above case that can scarcely be. It also appears singular that annealing should have the power of re-uniting the atoms of iron after crystallisation.

I call attention to the matter in the hope that some reader of the *Builder* may be able to explain the phenomenon. E. G.

"SUB-CONTRACTORS."

SIR,—In the report in your last issue under the above heading, the statement there made by Mr. Tilney is so incorrect that I trust you will allow me to make the following explanation public, it being calculated to do me much harm.

Being away from home, I was not aware that proceedings were being taken till I found, on my return, on Monday, the 25th, that the proceedings which you report had been taken, or I should most assuredly have been there, and had the following facts elicited:—

When Mr. Tilney made the statement that "on Saturday last when I received my money, I had told the men I had not got any, when I had plenty to pay them," he surely knew he was stating what was not correct, for instead of sending my money, as promised, he sent word for me to see him at twelve o'clock, at his yard, for my money; this being the time men leave work. I went to see him, and had to wait two hours, when he said he could not let me have any money, as he had not received any from the builder. He, however, eventually gave me 5*l.* to pay wages amounting to 11*l.* 5s. (I distributed the 5*l.* amongst the men, as in evidence.) I have since ascertained that Messrs. T. & M. had received an advance the previous week the very day he asked me to put on more men, so that he could make a show, and get an advance, and he promised me I should have 15*l.* the following week.

As to my account being overdrawn, I obtained a summons for money due, but on coming on for hearing, the Court had no jurisdiction, and referred me to the County Court, where, no doubt, I shall have an opportunity of further explaining away the slur on my character.

E. LEECH.

CHURCH-BUILDING NEWS.

North Cerney.—During the last two years considerable works have been effected in the very ancient and interesting church of this parish. The survey of the church made by the diocesan architect, Mr. Waller, of Gloucester, on the appointment of the present rector, the Rev. P. Goldsmith Medd, disclosed an unsafe condition of the east wall of the chancel, which has therefore been entirely rebuilt. This gave the opportunity for the restoration of the beautiful Early English east window, traces of which remained in the pointed arch on the inside, and in portions built into the masonry of the late wall, which was of the date of Elizabeth. The new window, together with its beautiful stained glass, by Messrs. Hardman—subject, "The Manifestation of the Risen Saviour to St. Mary Magdalene in the Garden," is the gift of Mrs. Dawson Allen, in memory of her husband, the late rector. The carved oak reredos, to be completed hereafter with suitable panelling for the whole space within the communion rails, is the gift of Mrs. Medd. The choir stalls are those designed by Mr. Butterfield for the first temporary chapel of Keble College at Oxford. In the body of the church, and in the north transept, comfortable open benches of good pitch pine have replaced the high pews. The space at the west end under the tower, formerly occupied by the children, has been converted into a vestry, and the children are now seated in the north transept. The organ has been removed from the west gallery to an organ-chamber recently built at the western angle of the north transept. The works have been carried out by Mr. Clutterbuck, builder, Gloucester.

Dagenham. — On the 25th ult., a vestry meeting was held at Dagenham, for the purpose of considering the plans submitted by Mr. Lee, architect, for the restoration of the parish church. The Vicar, in reference to a proposal which had been made to carry out a portion only of the works, said that there were several persons who would only contribute on condition that Mr. Lee's plan was carried out in its integrity, and the gallery removed. Mr. Lee, the architect, explained the plans, and said the main points were the seats and the gallery. The gallery was now a thing of the past, and if left up it would appear rather ridiculous. Mr. Lee explained that the accommodation at present was 353 seats, and that he should by his plan get 354, and there would be practically an increase of twenty-five, as none of them would be only suitable for children, as was the case with the seats in the west gallery. On the question being submitted, there were sixty-three votes for the retention of the gallery, and fifty-six for its removal. A poll was demanded by those who favoured the removal of the gallery.

Ilchester.—The fine old parish church of Ilchester, near Yeovil, is about to undergo restoration, at a cost of above 3,000*l.*, towards which nearly 400*l.* has been already raised. Messrs. Wilson, Willcox, & Wilson, of Bath, have prepared the plans.

Woodhouse (near Loughborough).—This parish church is about to be re-renovated by taking out all the old closed-up pews, and by being re-seated with open ones; and the church is also to be enlarged by the building of an additional north aisle. The cost of all will be defrayed by the generous gift of the widow of Mr. William Perry Herrick, Beau Manor Hall, near Loughborough.

Clifton.—A faculty has just been granted to the churchwardens of Holy Trinity Church, Clifton, by the Consistory Court, to enable them to carry out certain improvements which were decided on at a vestry meeting held in February. The proposed improvements consist of a new pulpit, reading-desk, lectern, additional means of exit, and the completion of the alterations which were commenced four years ago. The estimated cost of these works is about 500*l.*

North Wales.—The parish church of Aber,

North Wales, is on the eve of completion. It has cost under 3,000*l.* The architects are Messrs. Pugin, Ashlin, & Pugin, of Westminster.

Miscellanea.

Walsall Sewerage.—A special meeting of the Walsall Town Council was held on the 27th ult., for the purpose of taking into consideration the draft provisional order proposed to be issued by the Local Government Board with respect to the lands required for the proposed sewage works. The Local Government Board, in one of their letters, wrote:—"The Board consider it may be open to question whether the scheme of the Town Council will sufficiently purify the sewage before its discharge into the river to comply with the requirements of the Rivers Pollution Prevention Act, 1876: but, having regard to all the circumstances of the case, they have determined not to refuse the issue of the provisional order applied for by the Town Council. At the same time, it must be understood that, if the requirements of the Rivers Pollution Prevention Act are not satisfied, the Town Council will have to provide more effectual means for the purification of the sewage." It was resolved, "That, in view of the doubt raised by the Local Government Board in their letter, it is the opinion of this Council that no further proceedings should be taken in respect of the provisional order, the draft of which has been read, but that the whole subject be referred back to the Sewage Committee for further consideration, and that a copy of this resolution be sent to the Local Government Board." In the course of the discussion, Alderman Brownhill said Mr. Hawksley in his report merely expressed his belief that the tank system and treatment with lime would purify the sewage matter sufficiently, but that, if it should not do so, then the use of sulphate of ammonia would effect the desired end. Mr. Hawksley, in his estimate, however, put down only 1,500*l.* as the cost of the chemicals. The lime would cost half that amount, but the sulphate of ammonia, used on the scale named by Mr. Hawksley, would cost 10*l.* per day, or the enormous sum of 3,650*l.* per annum.

The Electric Light.—An exhibition of the Gramme electric light was given at the Rosehill Bridewell on the evening of the 27th ult. for the information of the Watch Committee and other members of the Town Council of Liverpool. The invention was shown by Messrs. Hartley & Talbot, the local agents for Messrs. C. Ball & Co., London. The light was shown in the large parade-room. The machine used on this occasion gave a light equal to 6,000 candles or 600 gas-burners. The cost of working it, as explained by Mr. Hartley, is 2¼d. per hour working without power, and 4¼d. per hour working with the requisite engine power. It is claimed for the machine that it excels all other similar inventions with regard to the degree of light it gives in relation to the weight of power it absorbs. The invention is largely used in France for lighting factories and large buildings, and is also in use on board British men-of-war. *The Daily Courier* says that the impression on those present was that the electric illuminator would, provided the cost was moderate, be advantageously employed in lighting the public buildings and thoroughfares. The invention will probably be further tested in Liverpool. An electric light was exhibited in the central hall of the House of Commons on the night of the 28th ult. It is not the Jablochoff candle, but a new magneto-electro light, which has already been tried in Paris. The Speaker came to witness the experiment, and the First Commissioner of Works spent some time in inquiring into the matter. So far as brilliancy is concerned, the light is said to have been in every way satisfactory, though it was dazzling from its very intensity; but it was exceedingly unsteady, owing, it is said, to the engine being without a governor.

Value of City Property.—The freehold ground-rent of 1,350*l.* per annum arising out of the premises situate at the corner of Gracechurch-street and Cornhill, and known as 59 & 60, Cornhill, covering an area of about 850 ft., has been sold by Messrs. Harvey & Davids for the sum of 33,750*l.* This is at the rate of nearly 40*l.* per foot superficial, and in round numbers 1,700,000*l.* per acre.

Washing in Saltaire.—Saltaire, the town Sir Titus Salt reared as the great seat of the alpaca manufacture, covers an area of over fifty acres, and provides accommodation for nearly 5,000 alpaca-workers and their families. It consists of twenty-two streets, containing 775 houses, besides forty-five almshouses for the aged. The streets are wide and regular, the façades of the houses neat, and the interiors fitted up with every accommodation. The baths and wash-houses, which stand about the centre of the town, are a great public convenience. Labouring men know the misery of washing-day in a small cottage; but the inhabitants of Saltaire are free from this domestic plague. There the working man's wife takes her clothes to the public wash-house overnight, and prepares them. Next morning she finds the three steam-engines, with their steam up, ready to drive the washing-machines. When washed, they are transferred to an immense Cornish boiler, 18 ft. by 6 ft., and when they have been rinsed they are placed in the centrifugal wringer, and in a few seconds they are nearly dry. These wringers consist of a huge circular trough, the sides of which are perforated by many holes, and it is made to revolve very rapidly by a shaft driven by steam. The clothes placed in it quite wet are driven against the sides of the trough with great force, and cling tighter and tighter as it rushes round, so that the water is squeezed out, escapes by the holes, and is carried away into the sewage-pipes. By this means a tubful of clothes is wrung almost dry in a few seconds, without any labour to the washerwoman. Next, stretching them on "horses," she wheels them into the drying-closet, and in a few hours from starting she brings them home pure and clean, neatly folded and mangled, be the day fair or foul.—*From "Great Industries of Great Britain."*

Chetham Hospital Blue Coat School, Manchester.—The old buildings of this school having been found to be totally inadequate and unsuitable for the purposes of the modern system of teaching in elementary schools, the governors determined, with the sanction of the Charity Commissioners, to erect a building which would meet all their requirements for educational purposes, and one that would also be in architectural harmony with the fine old pile of buildings of which they are, for the time being, the custodians. Accordingly, they secured the professional assistance of Mr. Alfred Waterhouse, A.R.A., architect, and he, acting under their instructions, in the early part of 1873 prepared designs and advertised for tenders for the erection of the new school buildings. Eventually the contract was entrusted to Mr. George Clay, who engaged to do the work for the sum of 3,840*l.* The building is in the Tudor style, and comprises a school-room, 72 ft. by 24 ft.; a class-room, 16 ft. 9 in. by 15 ft.; and gallery recess, 22 ft. by 12 ft. It is situated a little in advance of the fine old Chetham Library, on the north side, and adjoins the Palatine Hotel on the west.

Institution of Mechanical Engineers.—The next meeting of this Institution will be held at the Institution of Civil Engineers on the 11th and 12th inst., when, amongst other business, the following resolution, unanimously passed by the Council, will be submitted to the meeting for confirmation:—

"That three thousand pounds be voted from the funds of the Institution to Mr. William P. Marshall, in recognition of his valuable past services, subject to confirmation by the members in general meeting."

New Cattle Market, Darlington.—The Darlington corporation has now provided a place wherein the cattle-dealers who periodically visit the town can transact their business, without transforming the main street into a public fair-ground. The new market lies to the south of Victoria-road, close to Bank Top Station, thus being conveniently near the town and pretty easy of access from all directions. The area at present laid out with pens, roads, lairs, alleys, &c., is 21,384 square yards. Within the enclosure, however, there is besides a space of 3,245 square yards. The whole is surrounded by a brick wall and iron railings. There are, also, 5,800 square yards of land, the property of the corporation, which will be available for building purposes. The accommodation of the market provides for the reception of 694 fat, 745 lean, and 1,010 Irish cattle; 4,140 lean and 3,500 fat sheep (the provision for sheep including pigs and lairs for 56 cows).

Lime-street Station, Liverpool.—On the 27th ult. the somewhat difficult and delicate operation of moving the ponderous staging erected in one piece at the new extension works at Lime-street Station, Liverpool, was successfully performed without the slightest hitch occurring. This piece of framework weighs 540 tons, and is 201 ft. long by some 30 ft. broad, and about 60 ft. high. The structure serves as the scaffolding or platform for the workmen engaged in erecting the iron girders for the roof of the new station. It is the handiwork of Mr. E. W. Ives, contractor, who has also roofed the new station at Woodside. Nineteen large parallel girders in all have to be put up, and by means of the staging two are placed in position at a time. The staging is then moved on to the space that will be occupied by the next two spans, leaving those finished to stand alone, and so on till the nineteen are all in place. The base of the enormous structure rests on grooved wheels running on rails. With twenty-seven men using pinch-bars or levers to the wheels the staging was moved 33 ft. in the space of thirty-eight minutes, leaving clear the two first spans.

War and Pestilence.—It is feared that widespread pestilence may follow the recent horrors of the war in the East. Typhus fever is reported to be increasing at Constantinople, and is said to be very prevalent at Bucharest. A telegram from Vienna says that the Austrian Delegation have unanimously adopted a motion to refer to the Common Ministry a petition of the association of officials and various insurance companies praying the Government to take steps for disinfecting the battle-fields of the late war. The Delegation, at the same time, requested the Ministry to use their endeavours to arrest, by means of an international understanding, the danger which threatens the general health of Europe from the vast number of corpses lying unburied in Roumania and Bulgaria, and with this view to take steps for immediately organising an international Sanitary Commission. A later telegram from Constantinople says that a Sanitary Commission has arrived at Erzeroum from Tiflis, and is deliberating upon the best means of preventing an epidemic, whether by the cremation of the unburied bodies, or by consuming them by means of quicklime.

New Industries for the Iron and Coal Districts.—In a sketch under the heading of "A Run up the Rhondda," a writer in the *Western Mail* last week drew attention to the absolute necessity of starting new industries in the coal and iron districts. One part of the Glamorganshire coalfield, he says, is well-known to be approaching exhaustion, and fifty years again will see every ton of the 4-ft. seam in that district exhausted. There will still remain, however, an area of inferior coal. What, then, is to be done? A correspondent of the *Mail* points to two industries which should at once be started—patent fuel manufactory and tin-plate. With regard to patent fuel, it is thought that a manufactory in close proximity to the collieries and close to a railway centre ought to pay if properly managed. Enterprising capitalists are stated to have visited Merthyr a few days ago, with a view of setting on foot some new industries, prompted to do so principally by the abundant and cheap labour that is now in the market. The place has also the strong recommendation of being well placed for railway access to all parts of the kingdom.

Liverpool Land Company.—The sixteenth ordinary general meeting of the shareholders of this company was held last week. The report of the directors stated that, after paying last year's dividend and an interim dividend of five per cent. in September last, the balance to the credit of profit and loss was 26,635*l.* 17s. 5d., out of which the directors recommended a further dividend of 15 per cent., absorbing 5,243*l.* 8s., making 20 per cent. for the year, and leaving in reserve a balance of 21,392*l.* 9s. 5d. The chairman (Mr. Henry Tate), in moving the adoption of the report, said he had been asked how it was that they could pay such large dividends. The fact was, that they commenced on the good principle of never putting any extra value upon their land, and it now stood at the same price as it did fourteen years ago. They had still a great many acres of cheaply-bought land, which would yield them handsome profits for some years to come. On the motion of Mr. Picton, 1,000*l.* was placed at the disposal of the directors for their services.

Society of Engineers.—At a meeting of the Society of Engineers, held April 1st, in Victoria-street, Westminster, Mr. J. Bernays, vice-president, in the chair, a paper was read by Mr. W. Schönheyder on "Equalising the Wear in Horizontal Steam Cylinders." The author, after noticing the large extent to which the horizontal engine was used at the present time, in preference to the older type, the beam-engine, explained that one objection to its use was the great and unequal wear of the cylinder, which was due to the weight of the piston continually rubbing backwards and forwards on it, and to the difficulty found in lubricating it sufficiently, especially when the cylinder was kept hot by the now universal steam-jacket. After enumerating the evils resulting from the unequal wear of cylinders and pistons, the most important expedients for preventing it were described, and the author's reasons given why they could not fulfil their purpose in practice. The author then gave a description of his method of remedying the evil. This was stated to consist in making the piston-rod with a camber or upward bend, in such a manner as that, when loaded with the weight of the piston and placed in the cylinder, it assumed a straight line, and transferred the weight to outside guides. Special tools are used, which render the production of these rods easy and certain.

Pumping Engines.—At the meeting of the Institution of Civil Engineers, on the 26th ult., Mr. Bateman, president, in the chair, the paper read was on "Direct-Acting or Non-Rotative Pumping Engines and Pumps," by Mr. Henry Davey, C.E. The author discussed some new forms of direct acting pumping-engines and pumps, as a question of relative cost and efficiency, illustrating his arguments by practical examples. The direct-acting engine had a wider sphere of application in mining operations than elsewhere, and experience had proved it to be the best type for deep mine and heavy pumping. Until lately, the Cornish had been the only direct-acting and expansive engine. It was a very economical machine under favourable circumstances, but its range of expansive working was limited. Compound rotative engines had been made to do a higher duty than Cornish engines. In the early days of pumping, Hornblower, Trevethick, Woolf, and Sims experimented with compound Cornish engines in Cornwall; but these attempts had failed because the engines were single-acting, and the distribution of steam was such as to lead to great thermal loss from the cooling influence of the condenser. From these and other practical defects the engines fell into disuse.

The Growth of Bristol,—"Where is Bristol going to end?" asks the *Times and Mirror*. "We read, a day or two ago, that sixteen acres of land, the property of Mr. Langton (the new member for Mid-Somerset), situate between the race-course at Knowle and the Brislington railway-station, are to be laid out for building. The city is outgrowing its old municipal garment on all sides. The leap in the population from some 30,000 in William III.'s time to more than 130,000 in the mid-year of the present century, threatens to be surpassed in progressive proportion the next time we come to number up the people.....If sanitary arrangements and some little regard for structural appearances only go hand in hand with building enterprise, so long as there are folks to fill the new tenements, we suppose we ought to rejoice in our increasing dimensions."

Currall's Patent Ventilators.—The advertisement says, and we have reason to believe correctly, that these ventilators are very simple, efficient, and cheap; a regular supply of fresh air without any perceptible draught, and the removal of the vitiated air, are effected by the two forms,—the inlet and the outlet. The inlet is made suitable for doors, windows, and walls; the outlet for chimneys and walls. The principle is that of giving an upward current to the air admitted through an orifice in a convenient situation. Messrs. Tonks, of Birmingham, are the manufacturers.

Kent.—A collection of prints, illustrating the antiquities, buildings, &c., of the county of Kent, is being formed for the Archbishop's Library, Lambeth Palace. Those who have duplicate or other impressions are kindly asked to contribute. The ancient records of the See, further elucidated by Kentish books and prints, will then make this portion of the library at once valuable and unique.

Liverpool House-Painters' Association.—On the 25th ult. the annual tea-party and ball of the Liverpool House-painters' Association took place at St. George's Hall. Upwards of 800 persons attended, and the chair was occupied after tea by Mr. R. D. Holt. The annual statement was read by Mr. John Tatlock (the secretary), and it set forth that in case of accident members received 15s. per week, and 10*l.* was given in case of death of a member, and 8*l.* in case of the death of a member's wife. The payments for accidents during the year had amounted to 192*l.* 6s., and the payments in cases of death had reached 160*l.* Assistance was also given to members who left the town in search of work, and during the past year upwards of 30*l.* had been expended in that direction. A widows' and orphans' fund had been established last year, and the tea-party and ball then held in aid of the fund produced 61*l.* Of that amount 46*l.* had been paid out. The benefits paid away during the last financial year amounted to 428*l.* 9s. The number of members at present in the Association was 1,600.

Caerphilly Water Supply.—At a recent meeting in Caerphilly, Mr. George A. Lundie, C.E., propounded his scheme for the supply of water to Caerphilly. His proposal is to take the supply from the Cwm Ivor stream, a tributary of the Aber brook, to convey the water from thence by means of glazed socket-pipes to a reservoir and filtering-beds, to be situated on the hill side, about a quarter of a mile to the southward, whence the water would be carried by gravitation in pipes to all parts of the town. The gathering grounds of the brook, above the point at which it is proposed to abstract the water, are over 150 acres in extent, and in the driest seasons the stream has never run dry, being fed by numerous springs at the higher levels. The water is soft. The total cost of the works, including land, law, engineering, payment for mill rights, &c., is estimated at 3,000*l.*

New Infirmary at Consett.—A much-felt want at Consett has been supplied by the Consett Iron Company, who have built a new infirmary. The old building was merely two or three cottages thrown together. The new building is in Parliament-street, the company having set apart nearly an acre of land for the purpose. At the south end there is a ward, 40 ft. by 20 ft., which will be supplied with eight beds. The centre block contains nurse's room, front entrance, store-room, stairs, and hall, with three bedrooms and linen-room on the first floor. At the north end of the centre block is a convalescent ward, operating-room, and a ward for two beds, the latter being intended for severe cases, and isolated from the principal ward. Proper lavatories, bath-rooms, and other conveniences have been provided. The wards, &c., are to be heated by Dinning & Cooke's hot-water apparatus. The cost of the building, exclusive of the fittings, will be about 2,800*l.*

A Coincidence.—The *Halifax Guardian* says that the sudden death of Sir Gilbert Scott will be much regretted in Halifax, seeing that the work of restoration at the parish church is just on the eve of commencement. "It is a singular coincidence that the late Sir C. Barry had the designs for the Halifax Town-hall for one of his latest works; and now Sir G. Scott leaves the restoration of our parish church to be completed by others. Fortunately, the plans are in such a state of completeness that the work can be faithfully and efficiently carried out."

Art-Work for the Paris Exhibition.—From Exeter Mr. Harry Hems sends the beautiful oak chest exhibited at Philadelphia, and there awarded a medal. The beam out of which it was made formed part of Salisbury Cathedral. Mr. Hems's sculptured group in alabaster of our Lord and the infant, entitled "Safe in the Arms of Jesus," which also took a medal at Philadelphia, will go. Since it left America, the figures have been re-studied and several alterations made, which will go far to make it the more successful at Paris.

TENDERS

For the erection of a villa residence at Wood-green, for Mr. S. Standring. Mr. H. Saxon Snell, architect:—

Wall, Bros.	£833 0 0
Bamford	790 0 0
Larter & Son	760 0 0
Pocock (accepted)	740 0 0

For alterations and additions to the Presbyterian Church, Tullamore. Mr. Hector Harding, architect:—

Egan (accepted)	£207 0 0

For additions, &c., to Messrs. Goodbody's Tobacco Manufactory, Tullamore. Mr. Hector Harding, architect:—

Brien (accepted)	£530 10 0

For re-building No. 40, Cheapside. Messrs. Ford & Hesketh, architects:—

Adamson & Sons	£4,879 0 0
Morter	4,837 0 0
Scrivener & White	4,821 0 0
Shaw	4,806 0 0
Patrick & Sons	4,798 0 0
Bangs & Co.	4,769 0 0
Perry & Co.	4,649 0 0
Nightingale	4,647 0 0
Brass	4,599 0 0
Browne & Robinson	4,567 0 0
Downs & Co.	4,375 0 0
Ashby, Bros.	4,289 0 0

For re-building No. 42, Cheapside. Messrs. Ford & Hesketh, architects:—

Patrick & Sons	£5,380 0 0
Morter	5,367 0 0
Shaw	5,364 0 0
Adamson & Sons	5,359 0 0
Perry & Co.	5,229 0 0
Nightingale	5,228 0 0
Brass	5,205 0 0
Scrivener & White	5,203 0 0
Bangs & Co.	5,159 0 0
Downs & Co.	5,086 0 0
Browne & Robinson	4,984 0 0
Ashby Bros.	4,817 0 0

For re-building Nos. 45 and 46, Cheapside, and premises in Bread-street. Messrs. Ford & Hesketh, architects:—

Shaw	£10,679 0 0
Morter	10,649 0 0
Patrick & Sons	10,660 0 0
Adamson & Sons	10,606 0 0
Nightingale	10,474 0 0
Scrivener & White	10,434 0 0
Perry & Co.	10,431 0 0
Bangs & Co.	10,400 0 0
Brass	10,368 0 0
Downs & Co.	10,283 0 0
Browne & Robinson	10,108 0 0
Ashby, Bros.	10,204 0 0

For Wednesbury Bank. Messrs. Banks & Doubleday, architects:—

Nelson	£3,990 0 0
Bathell	3,950 0 0
Highams	3,803 0 0
Horsman & Co.	3,650 0 0
Brailsford & Brown	3,500 0 0
Stockton & Son	3,370 0 0
Crisp & Son	3,250 0 0
Dawson & Bradney	3,162 0 0
Trow & Sons (accepted)	3,100 0 0
Tatlow (withdrawn)	2,980 0 0

Quantities were supplied.

For stabling, Palmerston-yard, Kilburn, for the London General Omnibus Company, Limited. Mr. Alfred Tosh, architect. Quantities supplied by Mr. A. J. Bolton:—

Bowman & Scowen	£367 0 0
Beale	358 0 0
Aitchison & Walker	342 0 0
Mason & Bristy	320 0 0
Perkins	317 0 0
Gann	315 0 0

For the erection of a painting-room, &c., at the Royal Aquarium and Summer and Winter Garden, Westminster. Mr. A. Bedborough, architect. Quantities supplied by Messrs. R. L. Curtis & Sons:—

King & Green (accepted)	£888 0 0

For two villa residences at Forest Gate. Mr. George McDonell, architect:—

Page (accepted)	£1,030 0 0

For cast-iron pipes and special castings, for the Droitwich Water and Sewerage Works. Contract No. 2. Mr. E. Pritchard, engineer. Quantities by Mr. E. J. Purnell:—

Hopkins, Gilkes & Co.	£1,527 9 6
Haleys	1,448 0 0
Read & Co.	1,343 5 9
Platt's Clay Cross Company	1,274 0 0
Cochrane & Co.	1,269 0 0
The Horseley Company	1,255 0 0
Frimstone	1,225 0 0
Roberts (accepted)	1,217 0 0
Richards & Glaskin	1,195 0 0

For the construction of reservoir, pumping-station, tanks, outfall works, laying and jointing sewage and water-pipes, for Droitwich Water and Sewerage Works Contract No. 4:—

Krauss	£19,100 0 0
Bush	15,000 0 0
Miles	14,509 0 0
Bourne	13,816 0 0
Hilton & Co.	13,400 0 0
Dickson	12,100 0 0
Meats, Bros.	11,037 12 0
Law (accepted)	10,777 0 0

For St. Luke's National Schools, Barton Hill, Bristol. Messrs. Hay & Oliver, architects. Quantities by Mr. Arthur Deane:—

Lewis & Edbrook	£1,991 0 0
Hill & Prior	1,965 0 0
Banner & Co.	1,964 0 0
Howell & Son	1,960 0 0
Church	1,950 9 0
Hatherley	1,936 0 0
Humphries	1,935 0 0
Wilkins & Hill	1,909 0 0
Veals	1,885 0 0
Gorvett	1,839 0 0
Stephens & Bastow	1,799 0 0
Davis & Son	1,775 0 0
Hayes & Son	1,751 18 0
Beaven & Son	1,716 0 0
Cowlin	1,716 0 0
Hill	1,699 0 0
Jefferies	1,687 0 0
Eastabrook & Sons (accepted)	1,683 0 0
Philips	1,604 0 0

For additions and alterations to "The Palmers," Elstree, Herts, for Mr. O. E. Dawson. Quantities by Messrs. Batterbury & Huxley:—

Kiddle & Son	£3,723 0 0
Newman & Mann	3,707 0 0
Ashby, Bros.	3,659 0 0
Greenwoods	3,614 0 0
Linzell	3,500 0 0

For alterations at the "Union Arms," Panton-street, Haymarket. Mr. E. Clark, architect. Quantities by Messrs. Pain & Clark:—

Purkiss (accepted)	£1,655 0 0

For a villa residence for Mr. Geo. Groome, Queen's-road, Finsbury Park. Mr. E. Clarke, architect. Quantities by Messrs. Pain & Clark:—

Purkiss (accepted)	£1,505 0 0

For additions to Messrs. Moses & Sons' premises, 34, Monkwell-street. Messrs. Joseph & Pearson, architects. Quantities not supplied:—

Killbey	£746 0 0
Browne & Robinson	670 0 0
Langmead & Way	643 0 0
Williams & Sons	638 0 0

For the erection of new offices at the Kilburn Brewery, for Messrs. Michell & Phillips. Mr. R. Barker, architect:—

Norris	£790 0 0
Yerbury	630 0 0
Pryor	560 0 0

For alteration, sanitary works, &c., at Grange House, Upper Norwood, for the Rev. J. Rice Byrne. Mr. John Pugh, architect:—

Baker & Son	£259 0 0
Norman	248 10 6

Messrs. Comyn, Ching & Co.'s estimate for heating apparatus was accepted.

Mission Room, Bath-lane. Messrs. Austin, Johnson & Hicks, architects. Quantities not supplied:—

Lourys	£2,331 10 0
McEwans	2,100 0 0
Foggin	1,897 0 0
Robson	1,826 0 0
Whichello	1,760 0 0
Elliot	1,695 0 0
Leighton	1,688 5 6
Grisdale (accepted)	1,635 0 0
Miller	1,605 0 0
Lambe	1,493 17 6

For the erection of Salisbury Congregational Church. Messrs. Tarring & Wilkinson, architects:—

		Deduct if tower and spire be omitted.
Stevens & Son	£6,834 0 0	£1,489 0 0
Lawkins	6,585 0 0	1,555 0 0
Stevens & Bastow	6,323 0 0	1,523 0 0
Jones & Co.	5,849 10 0	1,450 0 0
Tryhorn	5,761 10 0	1,413 10 0
Goddard	5,685 0 0	1,310 0 0
Hale & Sons	5,585 0 0	1,302 0 0
Crook	5,435 0 0	1,215 0 0

For Byker Schools, for the Newcastle-upon-Tyne School Board. Messrs. Austin, Johnson & Hicks, architects. Quantities by Mr. Henderson:—

Forster	£10,134 9 5
Lourys	9,986 13 0
Nicholson	9,789 4 6
Robson & Son	9,417 0 0
Thompson	9,040 10 0
Reed	8,920 15 7
McEwans	8,900 0 0
Harbottle	8,885 0 0
Shotton, Bros.	8,838 0 0
Younger & Pattison	8,591 0 0
White & Sprcat	8,500 0 0
Whichello	8,500 0 0
Hudspith	8,481 5 3
Elliot	8,465 0 0
Harrison & Horn	8,332 0 0
Westgarth	8,274 16 0
Harvey	8,185 3 11
Pattinsons	8,117 10 1
Miller	8,110 13 3
Leighton	8,061 9 0
Harrisons	8,022 2 0
Grey & Humble (accepted)	7,866 16 3
Robson	7,328 16 8
Hutchinson & Sedgwick	7,183 6 0

Received too late:—

Bell	8,883 19 4
Huntley	8,716 4 6
Simpson	8,626 4 4
Atkinson	7,109 16 0

For front wall and railing to new Cemetery Chapels, Bromley, Kent. Mr. George Truefitt, architect:—

Ennor	£630 0 0
Taylor & Son	490 0 0
Smith	455 0 0
Riches	427 10 0
Stone	425 0 0
Copping	415 0 0
Hobern	391 0 0
Dover, Bros.	385 0 0
Cottam & Co. (accepted)	379 0 0

For the erection of public buildings and market-hall for the Rugeley Local Board of Health. Messrs. Foulkes & Ryland, architects. Quantities by Mr. W. A. Phipson:—

Whittome	£7,963 0 0
Gee	7,055 0 0
Loughton	6,896 15 0
Steel	6,890 0 0
Trow & Sons	6,700 0 0
Bethell	6,523 10 10
Gosling	6,520 0 0
Dawson & Bradney (accepted)	6,500 0 0
Matthews & Heath	6,290 0 0
Crisp & Son	6,055 0 0

For re-building No. 35, Bow-street, Covent Garden, for Mrs. May. Mr. John T. Woodard, architect. Quantities not supplied:—

Howard & Co.	£2,493 0 0
Colls & Sons (accepted)	2,382 0 0

For constructing new roads and sewers upon the Drew Estate, Barnet. Messrs. Farebrother, Ellis, Clark, & Co., surveyors:—

Anderson	£5,845 0 0
Doowra	5,587 0 0
Norris & Ford	4,896 0 0
Culverhouse	4,800 0 0
Keeble	4,488 0 0
Killingback	4,283 0 0
Plowman	3,995 0 0
Hiscox	3,870 0 0
Nowell & Robson (accepted)	3,800 0 0

For road-making and sewers for the British Land Company (Limited), on their estate at Sydenham:—

Crockett	£6,750 0 0
Richardson	6,500 0 0
Thompson & Son	6 467 0 0
Keeble	6,421 0 0
Killingback	6,350 0 0
Jackson	6,333 0 0
Dunmore	6,303 0 0
Harris	6,300 0 0
Pizzey (accepted)	6,275 0 0

For seven-story warehouse at Sharpness Point, for the Severn Ports Warehousing Company:—

Howell & Son	£7,900 0 0
Robertson	7,277 0 0
Baker & Son	6,993 0 0
Gazzard	6,733 0 0
Brock & Bruce	6,553 0 0
Stephens & Bastow	6,384 0 0
King	6,097 0 0
Moss	5,955 0 0
Thompson & Roberts	5,833 0 0
Jones & Co. (accepted)	5,785 0 0

For Salisbury Congregational Church:—

Stevens & Sons	£6,834 0 0
Sawkins	6,585 0 0
Stephens & Bastow	6,323 0 0
Jones & Co.	5,849 0 0
Tryhorn	5,761 0 0
Goddard	5,685 0 0
Hall & Sons (accepted)	5,585 0 0
Crook	5,435 0 0

The Brunswick Rock Asphalte Paving Company have taken Contracts for Wellington-road, Albion Gardens (Fulham Board of Works), ½-in. asphalte and 3 in. concrete; Wellington-street, Aldershott, ½ in. asphalte, and 3 in. concrete, and they expect to commence at once. When these are completed, it will make thirty-six streets in three years.

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